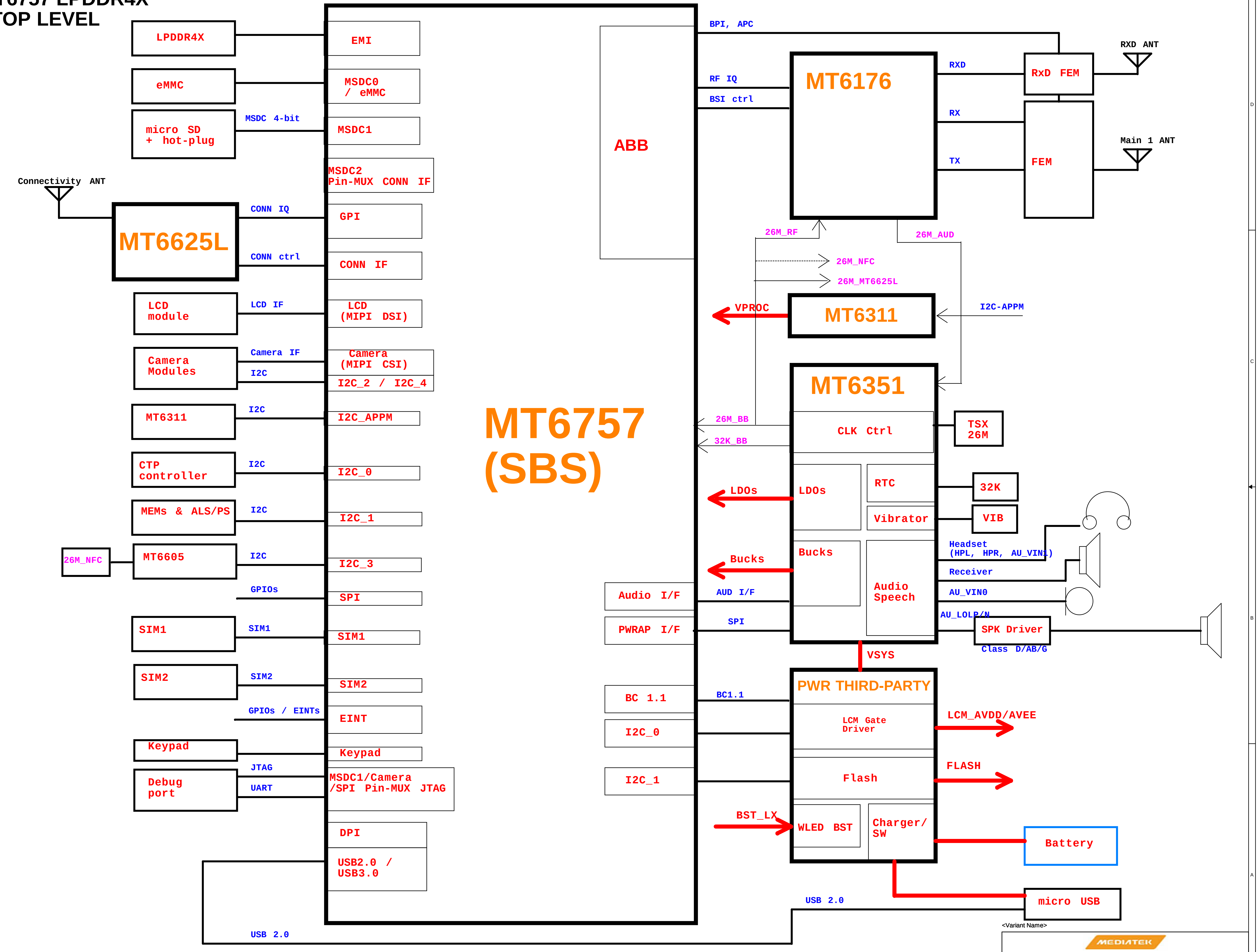
Project : MT6757 LPDDR4X
REF_SCH TOP LEVEL



<Variant Name>

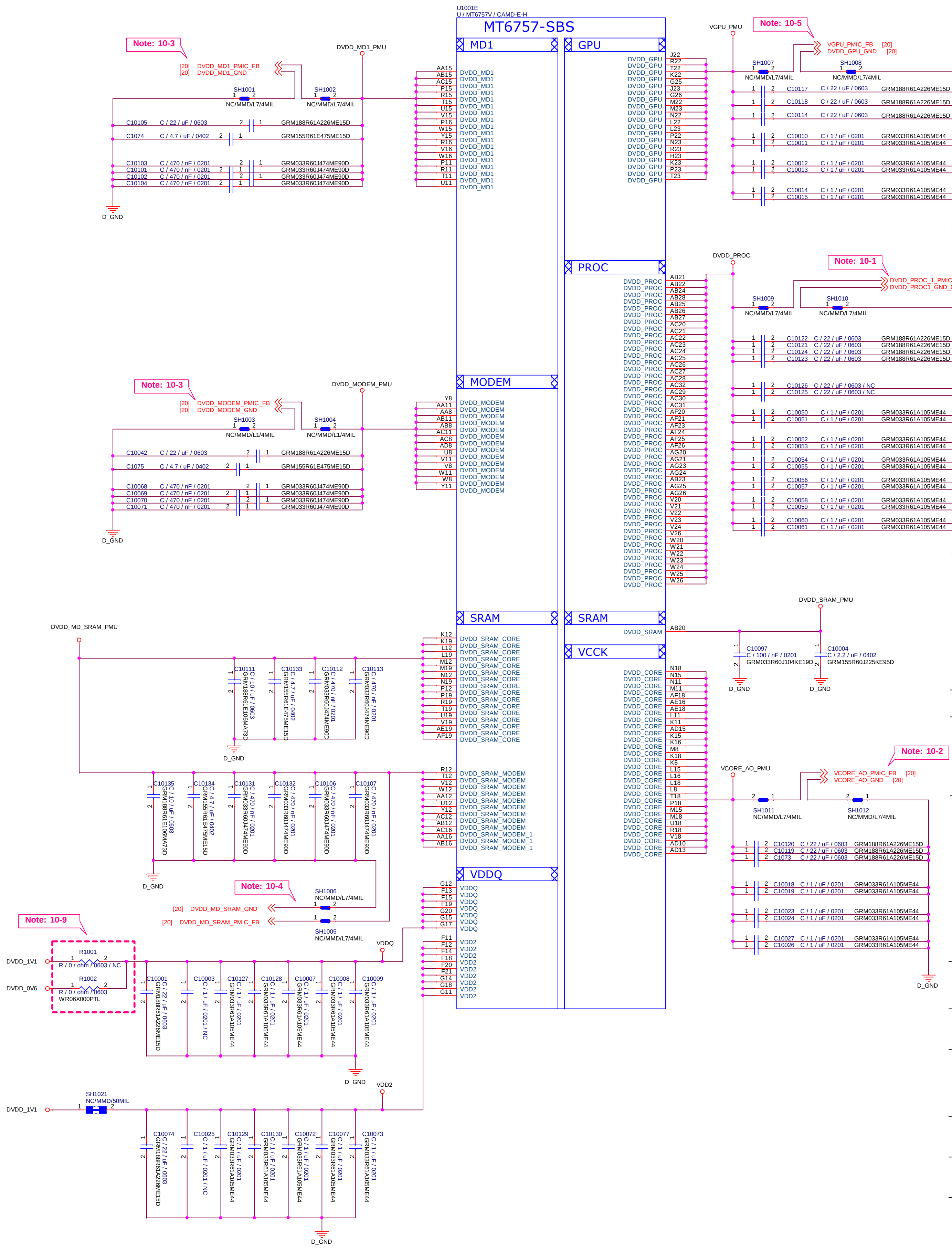
MEDIATEK	
Title	01_Block_Diagram
Size C	MTK Confidential
Date: Wednesday, June 29, 2016	Sheet 01 of 99

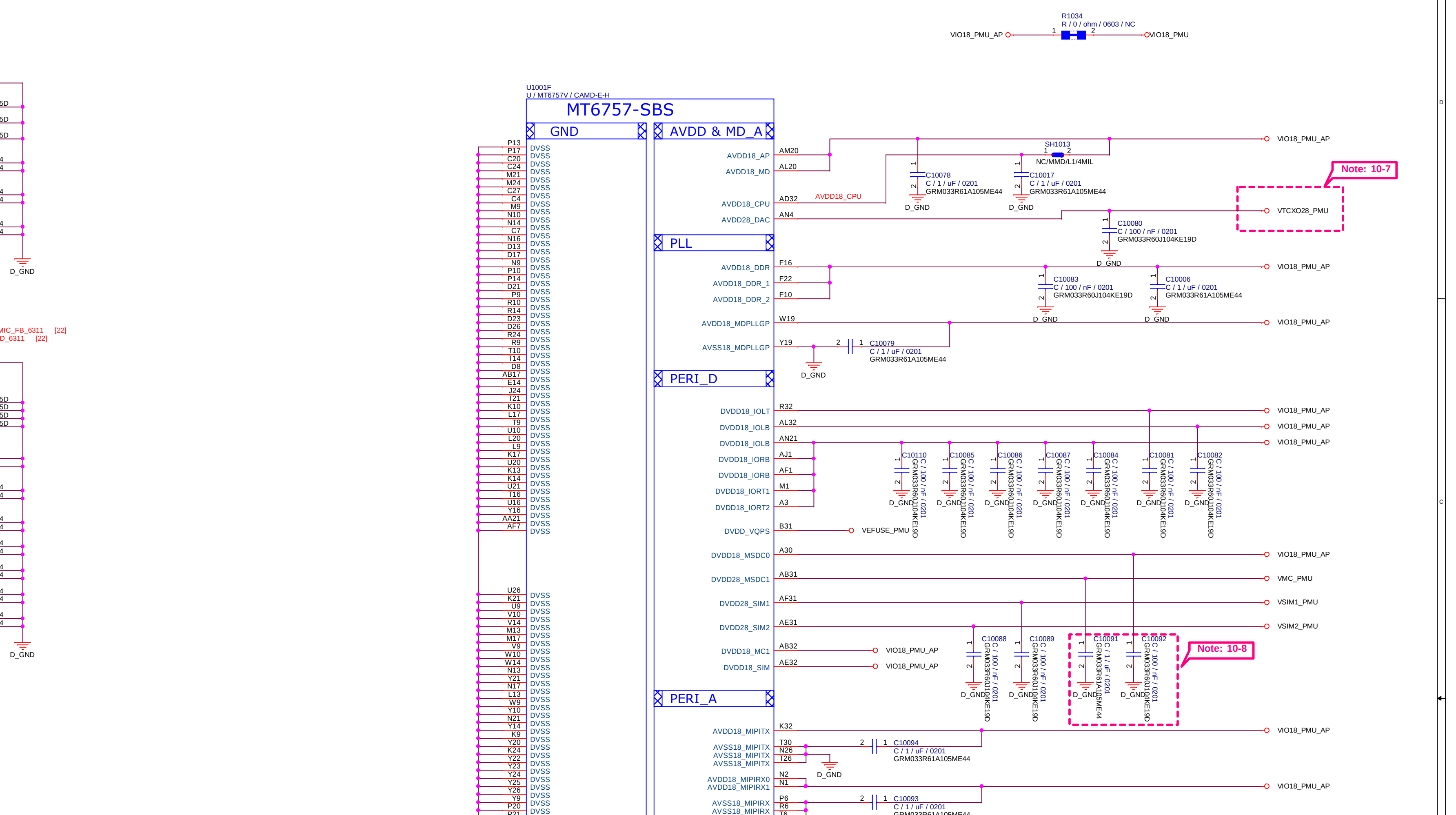
I2C	Function	I2C Spec.	Budget Timing	I2C Slave Address (7-bit mode)
I2C-0	CTP	400 Kbps	Yes.	GT1151 I2C address: 0X5D (Write:0xBA, Read:0xBB) or 0x14 (Write:0x28, Read:0x29)
	LCM Gate Driver	400 Kbps		RT4801A / LCM Gate Driver I2C address: 0X3E (Write:0x7C, Read:0x7D)
I2C-1	M Sensor	400 Kbps		AK09911C / M-Sensor I2C Address : 0x0C (Write:0x18, Read:0x19)
	A+Gyro Sensor	400 Kbps	Yes.	LSM6DS3 / A+Gyro I2C Address: 0x6A (Write:0xD4, Read:0xD5)
	Baro Sensor (Reserved)	400 Kbps		BMP280 / Baro I2C address: 0X77 (Write:0xEE, Read:0xEF)
	RGB / PS Sensor	400 Kbps		CM36558 / ALPS + UV I2C address: 0X51 (Write:0xA2, Read:0xA3)
	Flash LED	400 Kbps		LM3643 / Flash LED I2C address: 0X63 (Write:0xC6, Read:0xC7)
	Ext. Buck LP4 VDRAM	400 Kbps		FAN53526 / Ext. buck LP4 VDRAM I2C address: 0X60 (Write:0xC0, Read:0xC1)
	Ext. Buck LP4X VDRAM	400 Kbps		FAN53528B / Ext. Buck for LP4X VDRAM I2C address: 0X50 (Write:0xA0, Read:0xA1)
	SW Charger	400 Kbps		RT9466 / BQ25896 SWCHR I2C address: 0X6B (Write:0xD6, Read:0xD7)
	Smart PA	400 Kbps		RT5509 / TFA9890AUK Speaker AMP I2C Address: 0x34 (Write:0x68, Read:0x69)
I2C-2	Rear Camera - 21M	400 Kbps	Yes.	Rear camera (IMX338) I2C address: 0X1A (Write:0x34, Read:0x35) AF driver (6BCH01P1A) I2C address: 0X0C (Write:0x18, Read:0x19) EEPROM I2C address: 0X50 (Write:0xA0, Read:0xA1)
I2C-3	NFC	1.2 Mbps	Yes.	NFC I2C address: 0X28 (Write:0x50, Read:0x51)
I2C-4	Front Camera - 8M	400 Kbps	Yes.	Front camera (OV8858) I2C address: 0X10 (Write:0x20, Read:0x21) AF driver (6BA801P1) I2C address: 0X0C (Write:0x18, Read:0x19) EEPROM I2C address: 0X54 (Write:0xA8, Read:0xA9)
I2C-APPM	MT6311	TBD	Yes.	MT6311 / 2-Phase Buck I2C address: 0X6B (Write:0xD6, Read:0xD7)

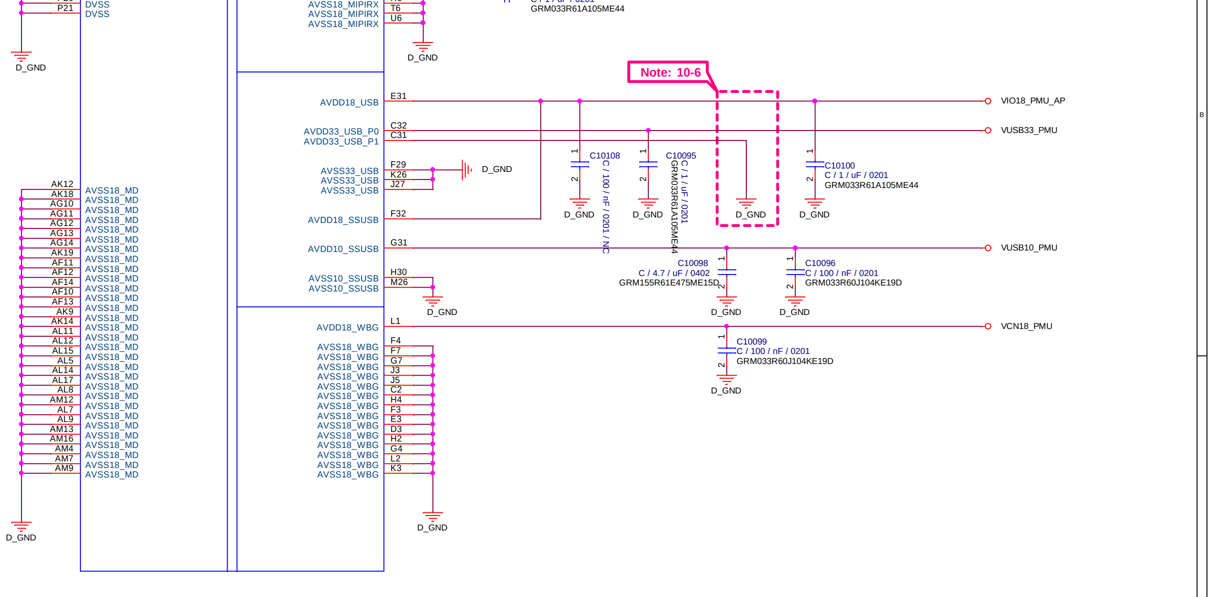
Note : I2C Spec. : Standard mode (100 kbps) and Fast mode (400 kbps), Fast mode Plus (1 Mbps) and High-speed mode (3.4 Mbps)

Date	Category	Item
2016.02.19	General	0.1 Pre-release
2016.06.17	Page 10	[Power] Add C1074 and C1075 to meet PDN suggestion of DVDD_MD1_PMU and DVDD_MODEM_PMU [Power] Add C1073 to meet PDN suggestion of VCORE_AO_PMU [Power] Connect DVDD_SRAM_CORE and DVDD_SRAM_MODEM together, so 1. Remove R1037 and R1038 2. Remove U2403, PL2403, C2431, C2432, C2433, and SH1015 3. Change C10111 and C10135 from "C / 22 / uF / 0603" to "C / 10 / uF / 0603" [Power] To use LPDDR4X memory as default, change R1001 from "R / 0 / ohm / 0603" to "R / 0 / ohm / 0603 / NC", and change R1002 from "R / 0 / ohm / 0603 / NC" to "R / 0 / ohm / 0603" [BB] Update power name of CPU 1. Change DVDD_TOP_SRAM to DVDD_SRAM_CORE 2. Change DVDD_MFG to DVDD_GPU 3. Change DVDD_DVFS to DVDD_PROC 4. Change DVDD_TOP to DVDD_CORE [BB] Delete Note 10-10
	Page 11	[BB] Change Note 11-2 To support LPDDR4 and LPDDR4X, R1101 should be 60.4 ohm 1%
	Page 12	[BB] Add TP1227 for wiring out JTAG dedicated function or use NFC_SRCLKENAI as JTRST to support dedicated JTAG function
	Page 20	[Power] Release full configuration table of PMIC bootstrap [Power] Change clock source to Co-TSX with 32K as PMIC default setting 1. Change X2001 from "X / 32 / KHz / TFX-02S / NC" to "X / 32 / KHz / TFX-02S" 2. Change C2067 and C2068 from "R / 0 / ohm / 0201" to "C / 22 / pF / 0201" [Power] Change PMIC bootstrap to Co-TSX with 32K as PMIC default setting 1. Change R2020 from "R / 0 / ohm / 0201" to "R / 0 / ohm / 0201 / NC" 2. Change R2030 from "R / 0 / ohm / 0201 / NC" to "R / 0 / ohm / 0201"
	Page 21	[Power] Update BQ25896 as an option of U2101 (Charger IC)
	Page 24	[Power] To use LPDDR4X memory as default, change U2402 from "U / FAN53528BUC08X / NC" to "U / FAN53528BUC08X", change L2402 from "PL / 0.47 / uH / 2016 / NC" to "PL / 0.47 / uH / 2016", change R2411 from "R / 0 / ohm / 0201 / NC" to "R / 0 / ohm / 0201", change C2430 from "C / 100 / nF / 0201 / NC" to "C / 100 / nF / 0201", change C10137 part name to C2421 and change it from "C / 4.7 / uF / 0402 / NC" to "C / 4.7 / uF / 0402", and change C10136 part name to C2423
	Page 41	[Memory] Set U4102 with LPDDR4X (KMWX10016M-B619) as default
	Page 50	[Consys] Change Part reference R9021 to R5002 [Consys] Change U5003 from "TRPX / TDK TPX205950MT-7110A1" to "BPF / SAFFB1G56AC0F0A" Change F5001 from "SAW / B8313 / EPCOS" to "TRPX / ACX TP2012-A1255DA"
	Page 51	[NFC] NFC uses XTAL mode, so R5103 is changed from "R / 0 / ohm / 0201" to "R / 0 / ohm / 0201 / NC", R5106 is changed from "R / 0 / ohm / 0201 / NC" to "R / 0 / ohm / 0201", X5101 is changed from "X / FA-128 / NC" to "X / FA-128", and R5108 is changed from "R / 10 / K / 0201" to "R / 10 / K / 0201 / NC" [NFC] To have better NFC performance, change C5101 from "C / 47 / pF / 0402" to "C / 56 / pF / 0402", change C5102 from "C / 47 / pF / 0402" to "C / 56 / pF / 0402", change C5103 from "C / 9.1 / pF / 0402" to "C / 5.6 / pF / 0402", and change C5104 from "C / 9.1 / pF / 0402" to "C / 5.6 / pF / 0402"

Date	Category	Item
2016.06.17	Page 60	[Audio] Update Note 60-4
	Page 63	[Sensor] Update U6301 P/N from "AK09911" to "AK09911C"
	Page 67	[Audio] Update TFA9890AUK as an option of U6701 (Smart PA) Connect C6 pin of U6701 with D6 and D7 pin to reserve for TFA9890AUK solution







Schematic design notice of "10_BB_POWER" page.

Note 10-1: Use 4 mil GND trace to shield signal and route trace in differential while connecting it to PMIC
Remote sense trace should be shielded with GND and routed in differential while connecting to PMIC

Note 10-2: Remote sense of VCORE_AO must be placed near BB ball
Remote sense trace should be shielded with GND and routed in differential while connecting to PMIC

Note 10-3: Remove sense of DVDD_MD1 and DVDD_MODEM must be placed near BB ball
Remote sense trace should be shielded with GND and routed in differential while connecting to PMIC

Note 10-4: Remote sense of DVDD_SRAM_MD & DVDD_SRAM_CORE must be placed near BB ball

Note 10-5: Remote sense trace should be shielded with GND and routed in differential while connecting to PMIC

Note 10-6: Connect AVDD33_USB_P1 (C31 ball) to
1. "VUSB33_PMU" for USB application
2. "GND" for non-use on USB1

Note 10-7: AVDD28_DAC (AN4 ball) must be powered by "VTCXO28_PMU".

Note 10-8: C10091 closed DVDD28_MSDC1 150mil
C10092 closed DVDD18_MSDC0 150mil

Note 10-9: R1001 for LPDDR4, R1002 for LPDDR4X
Please refer to DDR design notice and MMD for detail information

<Variant Name>

MEDIATEK

Title	10_BB_POWER
Size D	MTK Confidential
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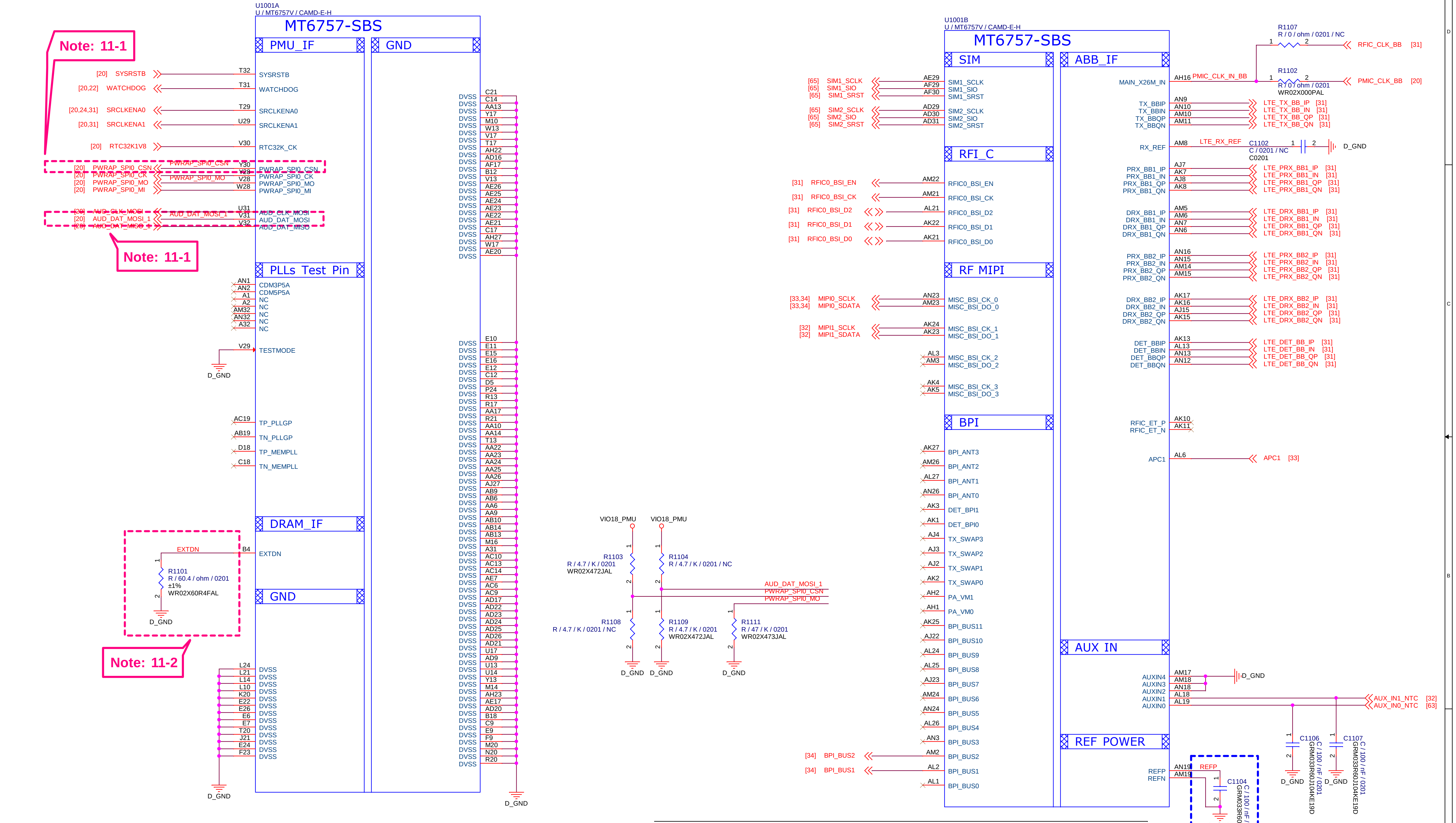
VCTCXO & With 32K
R1107 = 0 ohm
R1102 = NC

TSX & Without 32K
R1107 = NC
R1102 = 0 ohm



Close to AP IC

PWRAP_SPI0_CSN	AUD_DAT_MOSI	JTAG
HI	LO	N/A
HI	HI	SPI_CSB/SPI_CLK/SPI_MO/SPI_MI/SRCLKENAI(JTRST)
LO	LO	CAM_PDN0/CAM_PDN1/CAM_RST0/CAM_RST1/EINT8(JTRST)
LO	HI	MSDC1_CLK/MSDC1_CMD/MSDC1_DAT0/MSDC1_DAT1/MSDC1_DAT2(JTRST)

Schematic design notice of "11_BB_1" page.

Note 11-1: PWRAP_SPI0_CSN and AUD_DAT_MOSI are bootstrap pins for JTAG feature

Note 11-2: The resistor of EXTDN for DRAM has to be placed near to BB as close as possible
For LPDDR4 and LPDDR4X, R1101 = 60.4 ohm 1%

Note 11-3: AUD_CLK_MOSI/AUD_DAT_MOSI/AUD_DAT_MISO
1. These traces should be shielded with GND
2. Trace length should be as same as possible and the difference among these traces cannot over 1350mils

<Variant Name>

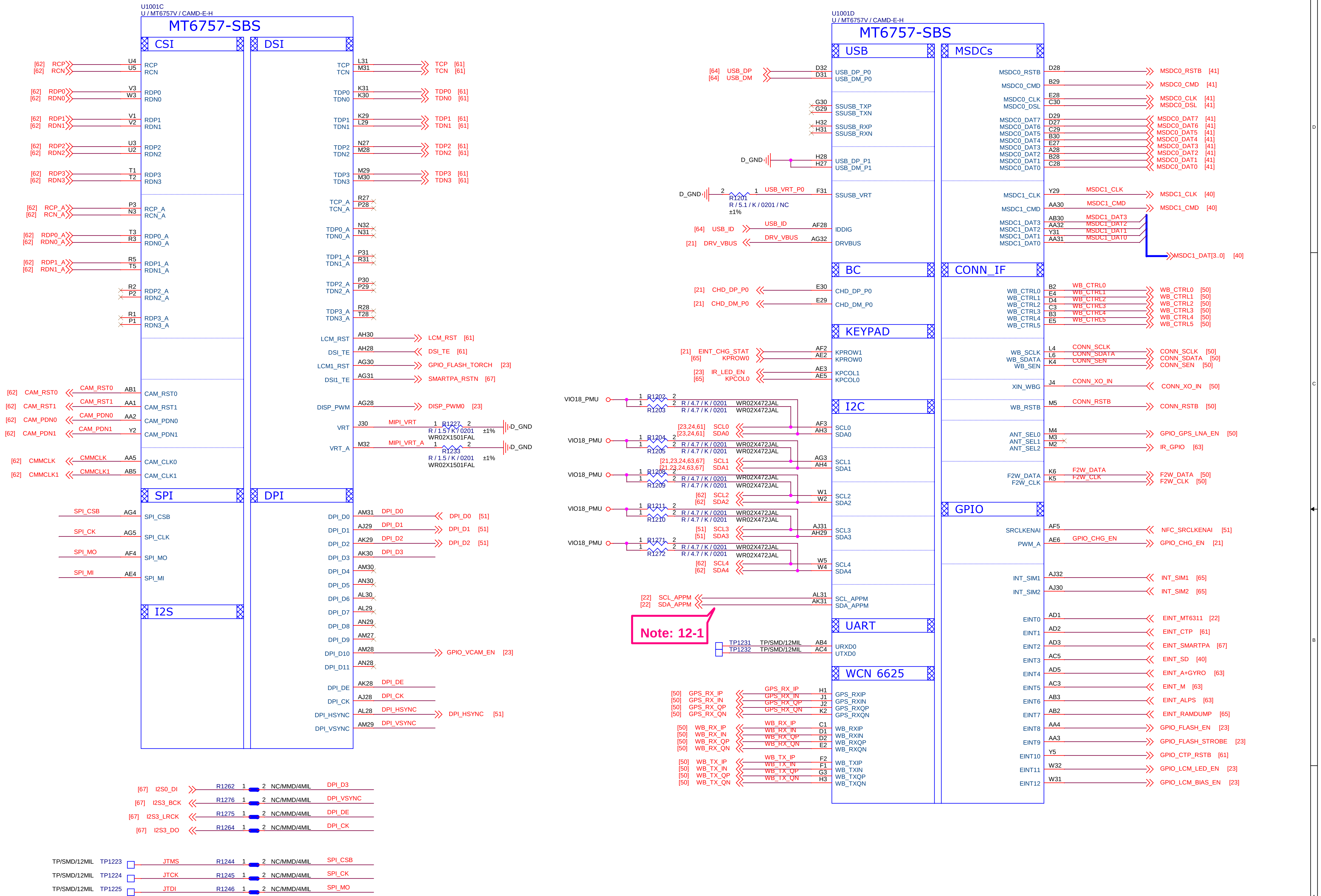
MEDIATEK

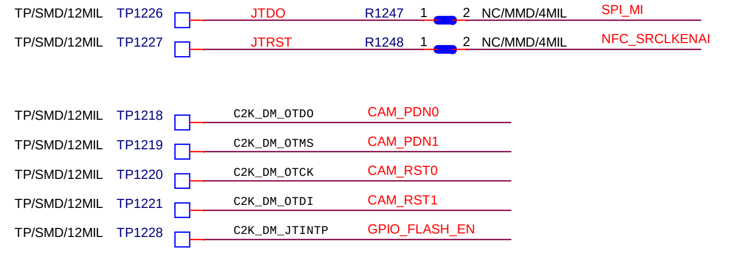
Title: 11_BB_1

Size: C

MTK Confidential

Date: Wednesday, June 29, 2016 Sheet 11 of 99





Schematic design notice of "12_BB_2" page.

Note 12-1: I2C APPM is dedicated for MT6311 2-phase buck control.

Note 12-2: If use NFC as XTAL mode, NFC_SRCLKENAI could be set as JTRST to support JTAG dedicated function, and add TP1227 to support JTRST wire out

<Variant Name>

MEDIATEK

Title	12_BB_2
Size C	MTK Confidential
Date: Wednesday, June 29, 2016	Sheet 12 of 99

<Variant Name>

MEDIATEK

Title: 13_BB_3

Size: C

MTK Confidential

Date: Wednesday, June 29, 2016 | Sheet 13 of 99

Schematic design notice of "20_POWER_MT6351" page.

Note 20-1: Layout trace from MT6351 ball G4 AUDREFN to Audio jack GND must surround shield with GND

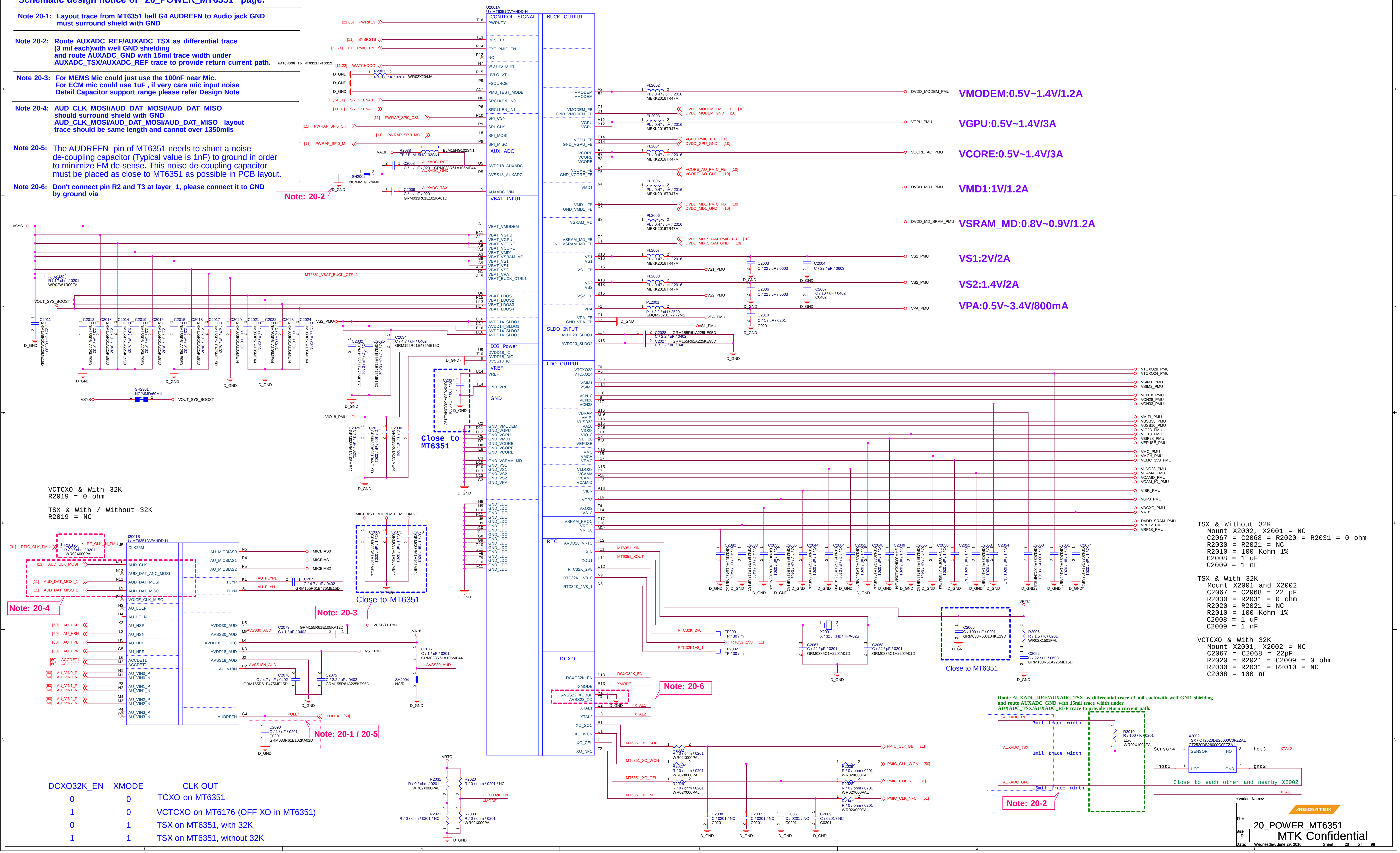
Note 20-2: Route AUXADC_REF/AUXADC_TSX as differential trace (3 mil each)with well GND shielding and route AUXADC_GND with 15mil trace width under AUXADC_TSX/AUXADC_REF trace to provide return current path.

Note 20-3: For MEMS Mic could just use the 100nF near Mic. For ECM mic could use 1uF , if very care mic input noise Detail Capacitor support range please refer Design Note

Note 20-4: AUD_CLK_MOSI/AUD_DAT_MOSI/AUD_DAT_MISO should surround shield with GND AUD_CLK_MOSI/AUD_DAT_MOSI/AUD_DAT_MISO layout trace should be same length and cannot over 1350mils

Note 20-5: The AUDREFN pin of MT6351 needs to shunt a noise de-coupling capacitor (Typical value is 1nF) to ground in order to minimize FM de-sense. This noise de-coupling capacitor must be placed as close to MT6351 as possible in PCB layout.

Note 20-6: Don't connect pin R2 and T3 at layer_1, please connect it to GND by ground via



VCTCXO & With 32K
R2019 = 0 ohm

TSX & With / Without 32K
R2019 = NC

DCXO32K_EN	XMODE	CLK OUT
0	0	TCXO on MT6351
1	0	VCTCXO on MT6176 (OFF XO in MT6351)
0	1	TSX on MT6351, with 32K
1	1	TSX on MT6351, without 32K

TSX & Without 32K
Mount X2002, X2001 = NC
C2067 = C2068 = R2020 = R2031 = 0 ohm
R2030 = R2021 = NC
R2010 = 100 Kohm 1%
C2008 = 1 uF
C2009 = 1 nF

TSX & With 32K
Mount X2001 and X2002
C2067 = C2068 = 22 pF
R2030 = R2031 = 0 ohm
R2020 = R2021 = NC
R2010 = 100 Kohm 1%
C2008 = 1 uF
C2009 = 1 nF

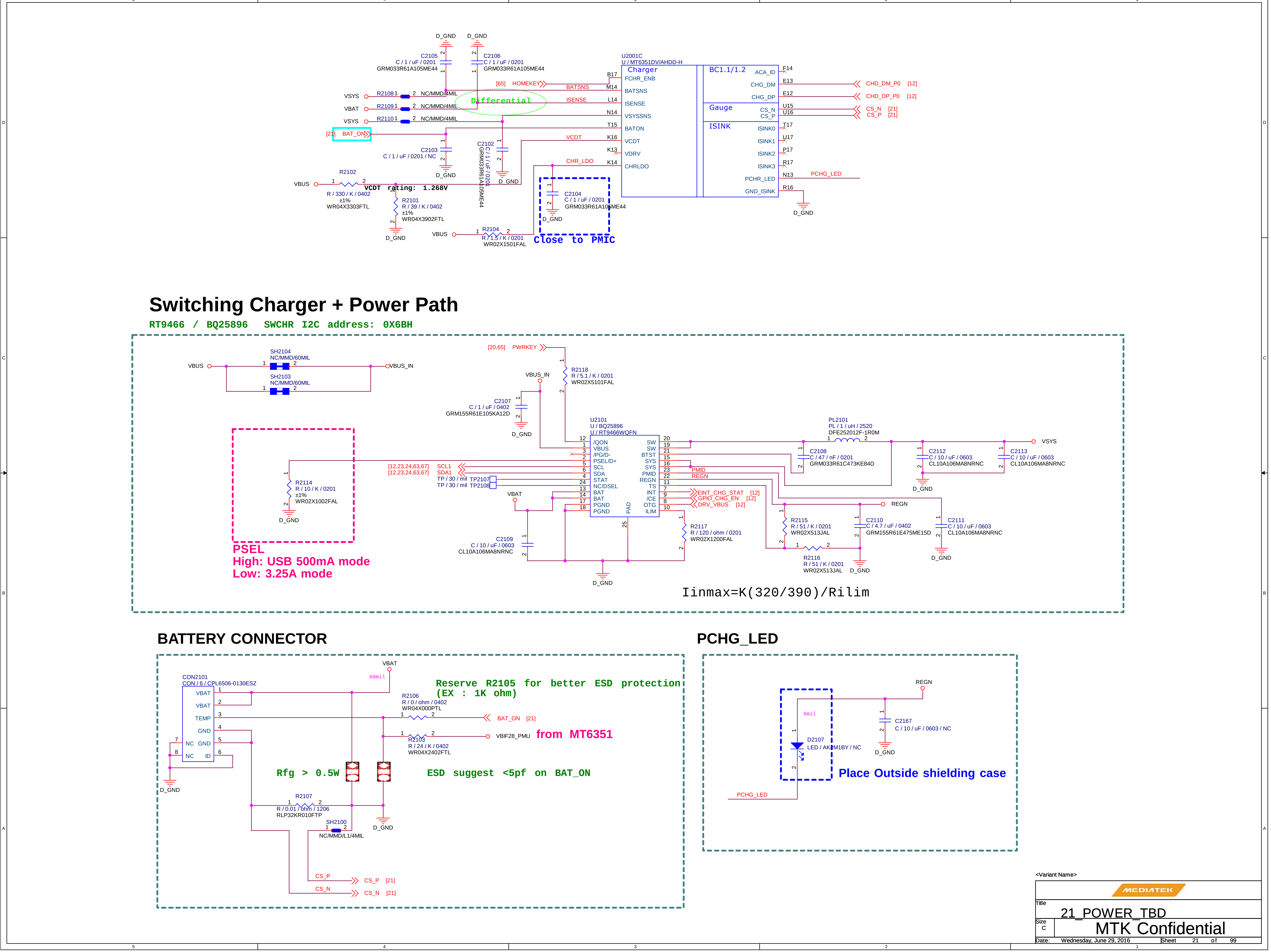
VCTCXO & With 32K
Mount X2001, X2002 = NC
C2067 = C2068 = 22pF
R2020 = R2021 = C2009 = 0 ohm
R2030 = R2031 = R2010 = NC
C2008 = 100 nF

MEDIATEK

Title: 20_POWER_MT6351

Size: D — MTK Confidential

Date: Wednesday, June 29, 2016 — Sheet 20 of 99


U2001C
U / MT6351DV/AHDD-H
Charger
FCHR_ENB
BATSNS
ISENSE
VSYSSNS
BATON
VCDT
VDRV
CHRLDO
BC1.1/1.2
ACA_ID
CHG_DM
CHG_DP
Gauge
CS_N
CS_P
ISINK
ISINK0
ISINK1
ISINK2
ISINK3
PCHR_LED
GND_ISINK
CHD_DM_P0 [12]
CHD_DP_P0 [12]
CS_N [21]
CS_P [21]
PCHG_LED
[65] HOMEKEY
Differential
VSYS
VBAT
R2108
R2109
R2110
NC/MMD/4MIL
[21] BAT_ON
C2105
C / 1 / uF / 0201
GRM033R61A105ME44
C2106
C / 1 / uF / 0201
GRM033R61A105ME44
C2103
C / 1 / uF / 0201 / NC
C2102
C / 1 / uF / 0201
GRM033R61A105ME44
C2104
C / 1 / uF / 0201
GRM033R61A105ME44
D_GND
VBUS
R2102
R / 330 / K / 0402
±1%
WR04X3303FTL
VCDT rating: 1.268V
R2101
R / 39 / K / 0402
±1%
WR04X3902FTL
R2104
R / 1.5 / K / 0201
WR02X1501FAL
Close to PMIC
Switching Charger + Power Path
RT9466 / BQ25896 SWCHR I2C address: 0X6BH
SH2104
NC/MMD/60MIL
SH2103
NC/MMD/60MIL
VBUS_IN
[20,65] PWRKEY
R2118
R / 5.1 / K / 0201
WR02X5101FAL
C2107
C / 1 / uF / 0402
GRM155R61E105KA12D
U2101
U / BQ25896
U / RT9466WQFN
/QON
VBUS
/PG/D-
PSEL/D+
SCL
SDA
STAT
NC/DSEL
BAT
PGND
SW
BTST
SYS
PMID
REGN
TS
INT
/CE
OTG
ILIM
PAD
PL2101
PL / 1 / uH / 2520
DFE252012F-1R0M
C2108
C / 47 / nF / 0201
GRM033R61C473KE84D
C2112
C / 10 / uF / 0603
CL10A106MA8NRNC
C2113
C / 10 / uF / 0603
CL10A106MA8NRNC
R2114
R / 10 / K / 0201
±1%
WR02X1002FAL
PSEL
High: USB 500mA mode
Low: 3.25A mode
[12,23,24,63,67] SCL1
[12,23,24,63,67] SDA1
TP / 30 / mil TP2107
TP / 30 / mil TP2108
C2109
C / 10 / uF / 0603
CL10A106MA8NRNC
EINT_CHG_STAT [12]
GPIO_CHG_EN [12]
DRV_VBUS [12]
R2117
R / 120 / ohm / 0201
WR02X1200FAL
R2115
R / 51 / K / 0201
WR02X513JAL
R2116
R / 51 / K / 0201
WR02X513JAL
C2110
C / 4.7 / uF / 0402
GRM155R61E475ME15D
C2111
C / 10 / uF / 0603
CL10A106MA8NRNC
Iinmax=K(320/390)/Rilim
BATTERY CONNECTOR
CON2101
CON / 6 / CPL6506-0130ESZ
VBAT
TEMP
GND
NC
ID
60mil
Reserve R2105 for better ESD protection
(EX : 1K ohm)
R2106
R / 0 / ohm / 0402
WR04X000PTL
BAT_ON [21]
R2103
R / 24 / K / 0402
WR04X2402FTL
VBIF28_PMU
from MT6351
Rfg > 0.5W
ESD suggest <5pf on BAT_ON
R2107
R / 0.01 / ohm / 1206
RLP32KR010FTP
SH2100
NC/MMD/L1/4MIL
CS_P [21]
CS_N [21]
PCHG_LED
REGN
6mil
D2107
LED / AKTM1BY / NC
C2167
C / 10 / uF / 0603 / NC
Place Outside shielding case
<Variant Name>
MEDIATEK
Title
21_POWER_TBD
Size C
MTK Confidential
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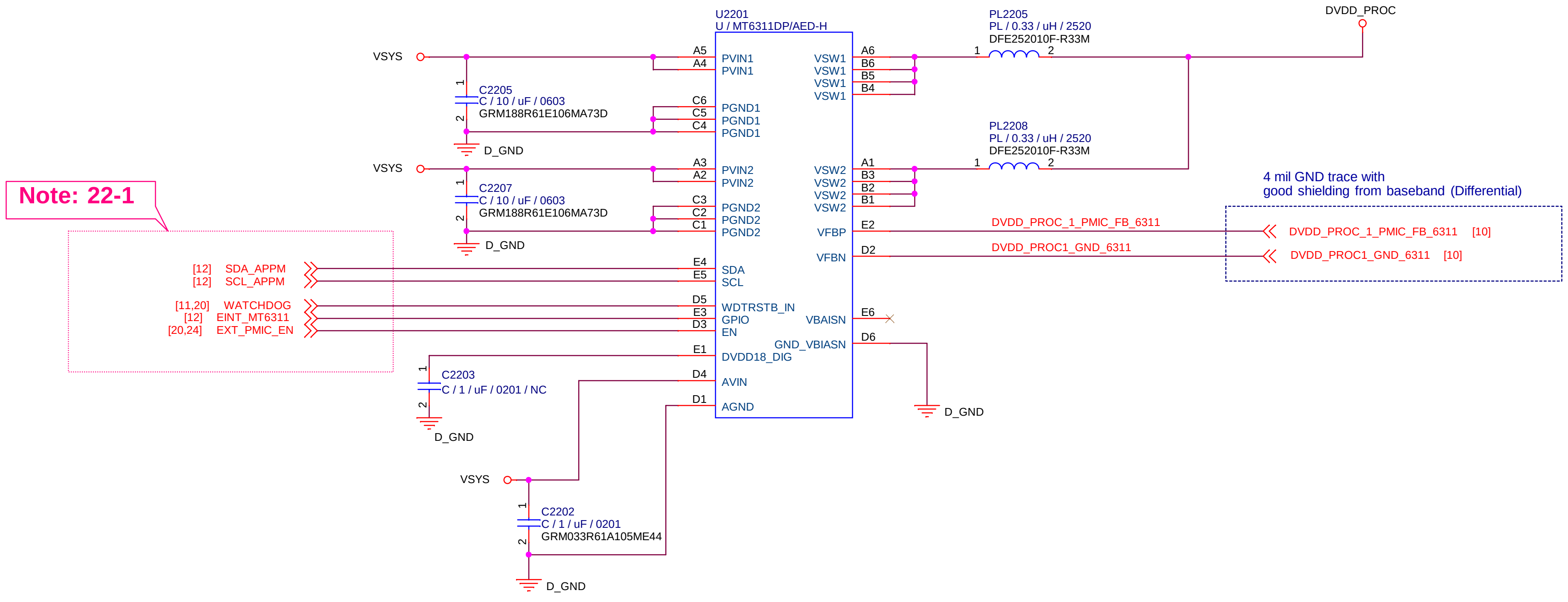
2-Phase Buck

MT6311 / 2-Phase Buck I2C address: 0X6B



Schematic design notice of "22_POWER_MT6311" page.

Note 22-1: **MT6311 => Buck EN controlled by EXT_PMIC_EN from MT6351 and I2C.**

<Variant Name>

MEDIATEK

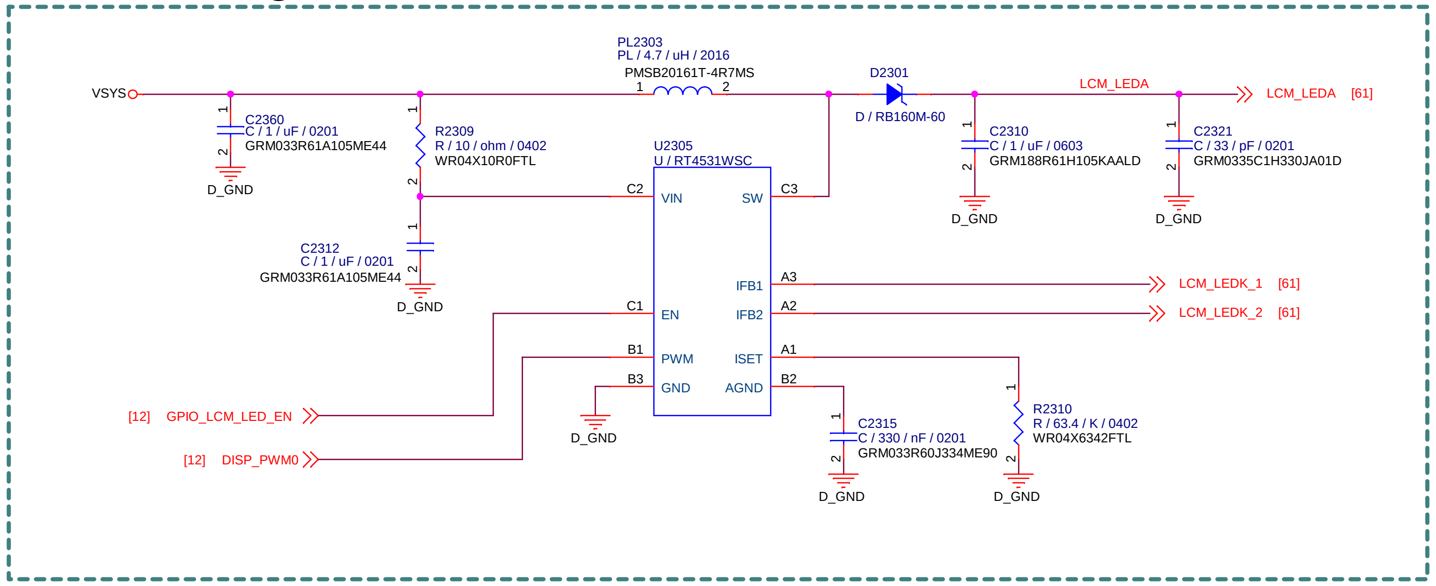
Title: 22_POWER_MT6311

Size: C

MTK Confidential

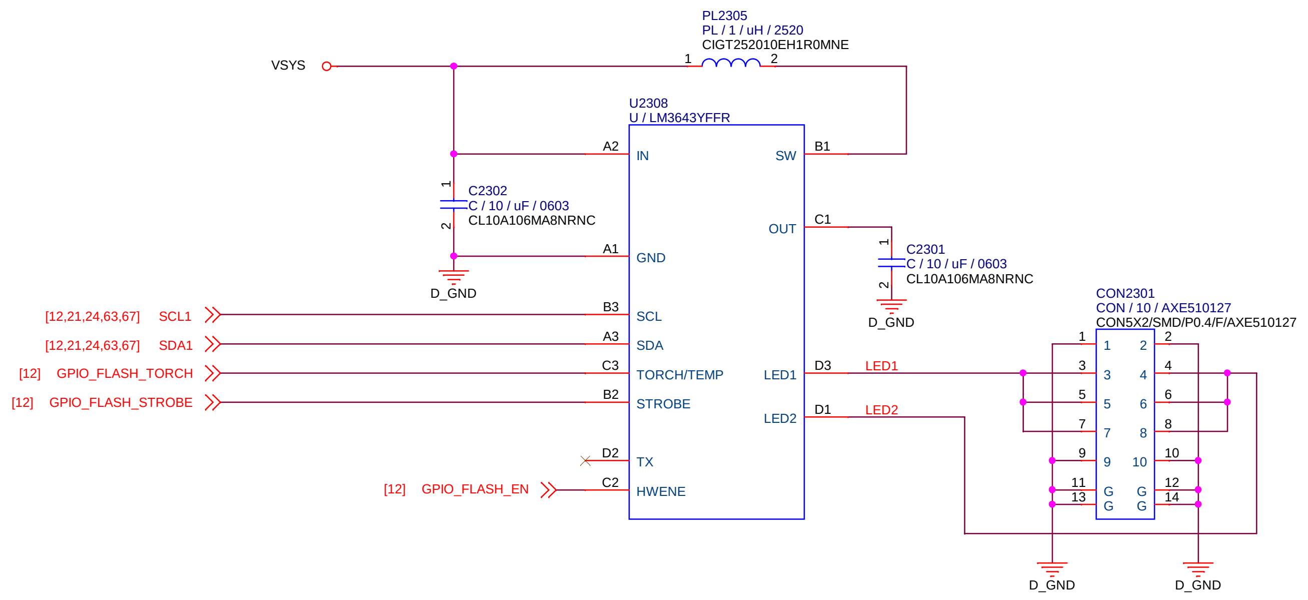
Date: Wednesday, June 29, 2016 | Sheet 22 of 99

LCM Backlight LED Driver

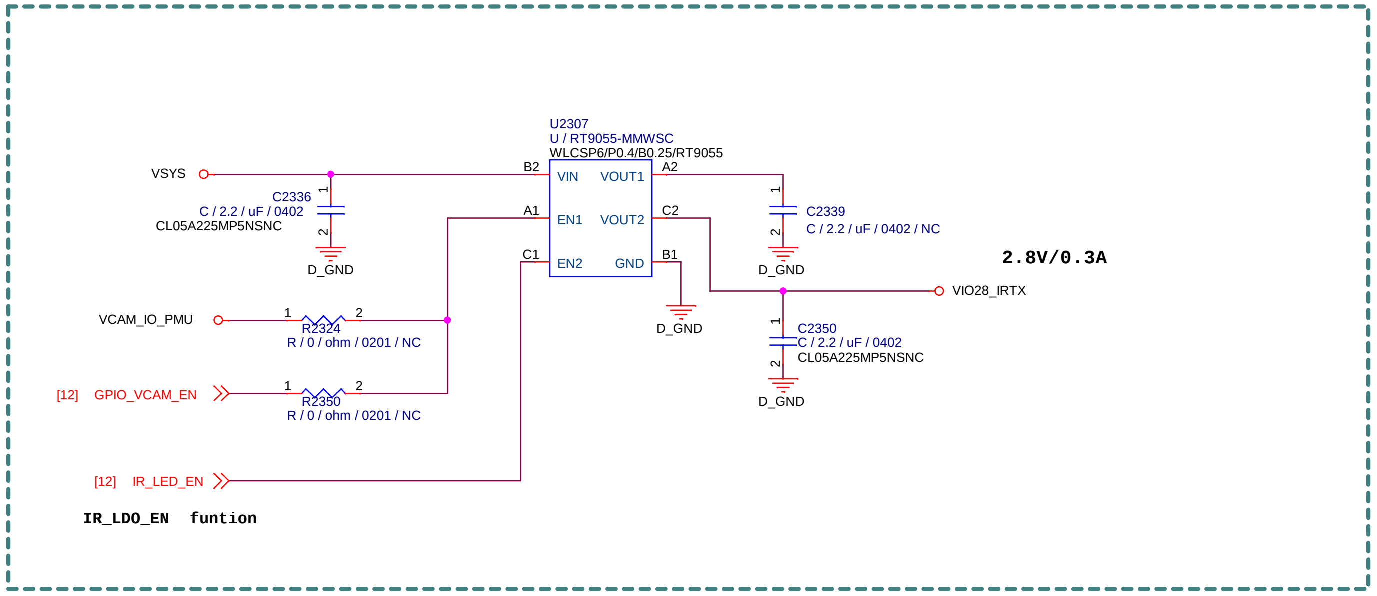


Flash LED 5V Boost

LM3643 / Flash LED I2C address: 0X63 (Write:0xC6, Read:0xC7)

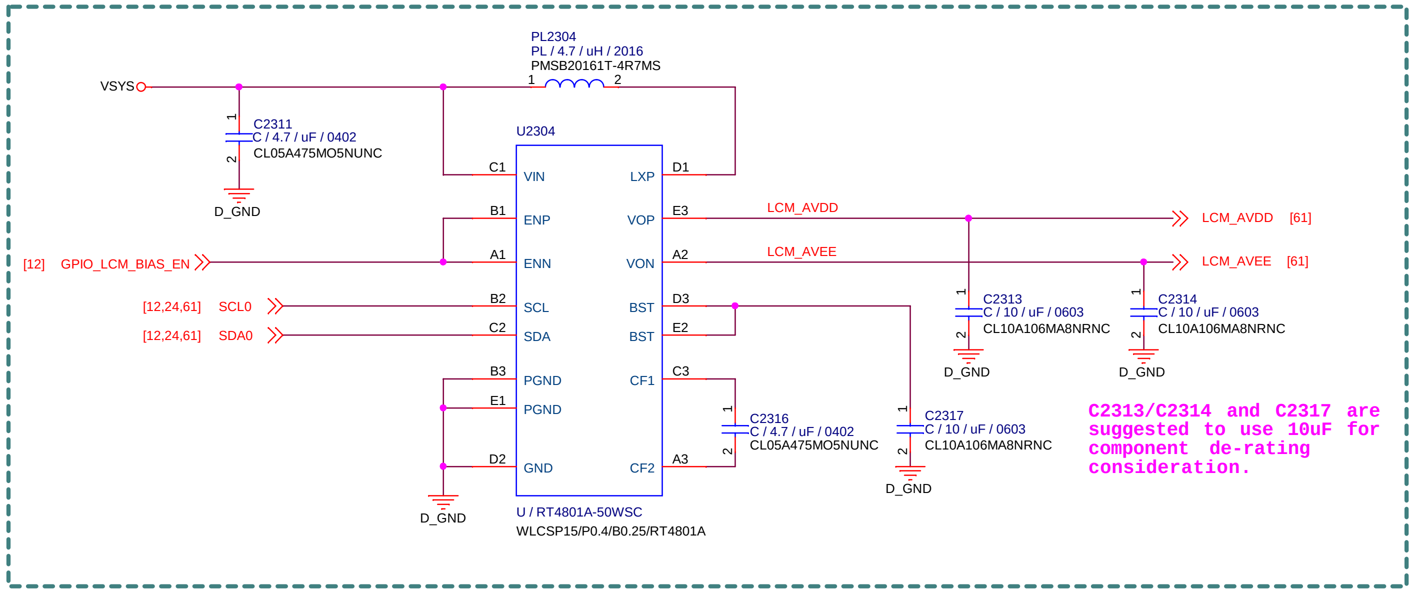


LDO for IR Function & Reserved Function



LCM Gate Drive

RT4801A / LCM Gate Driver I2C address: 0X3E (Write:0x7C, Read:0x7D)



<Variant Name>

Title: 23_POWER_THIRD-PARTY

Size: C

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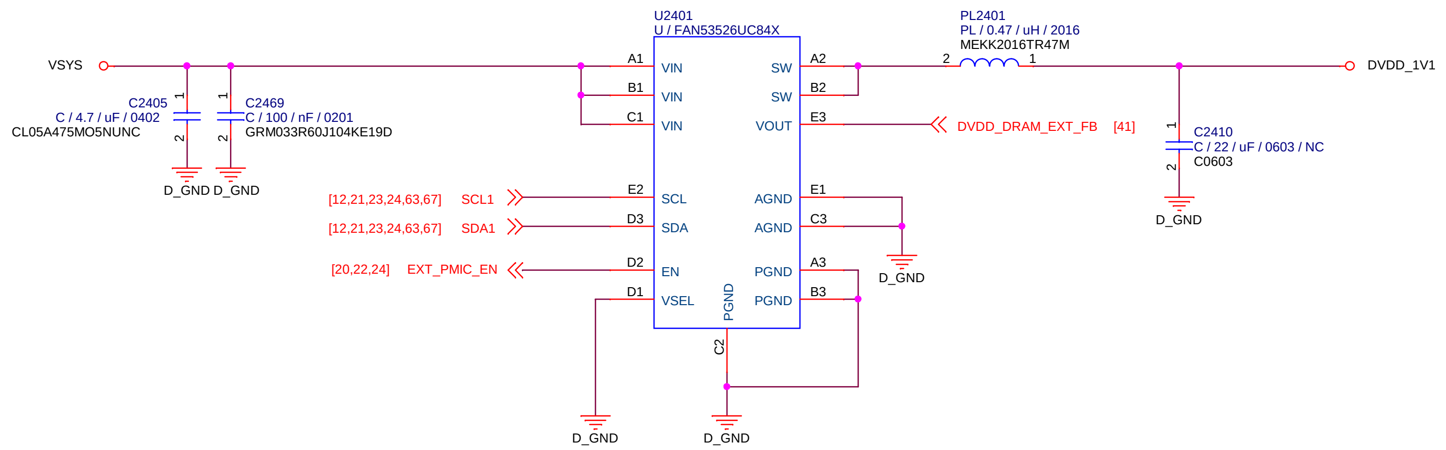
Ext. Buck for LP4 VDRAM

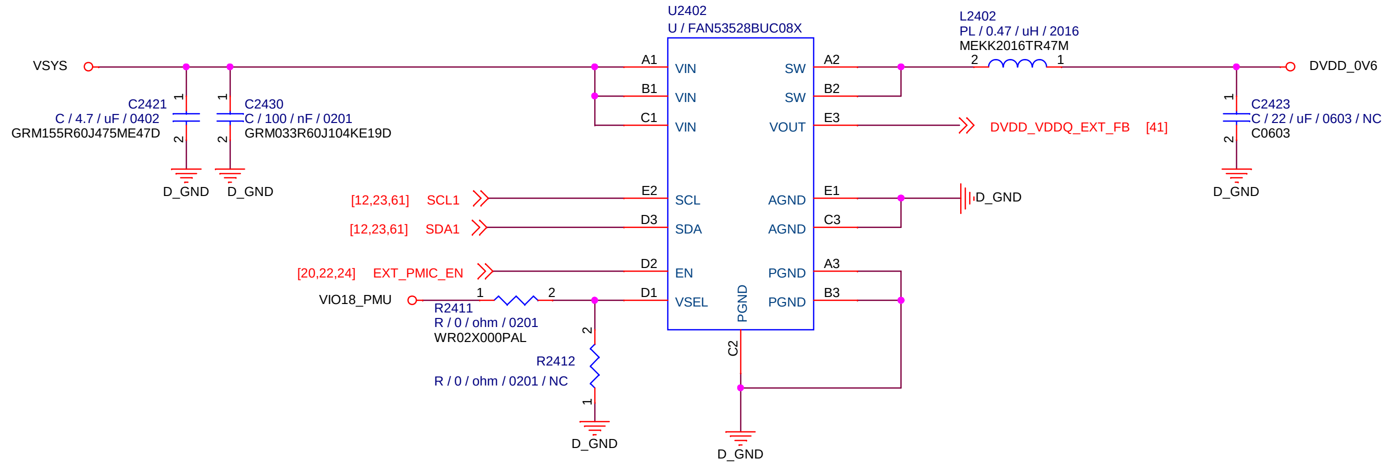
FAN53526 / Ext. buck for LP4 VDRAM
I2C address: 0X60 (Write:0xC0, Read:0xC1)



Note: 24-1

Ext. Buck for LPDDR4X

FAN53528B / Ext. Buck for LPDDR4X VDRAM
I2C address: 0X50 (Write:0xA0, Read:0xA1)

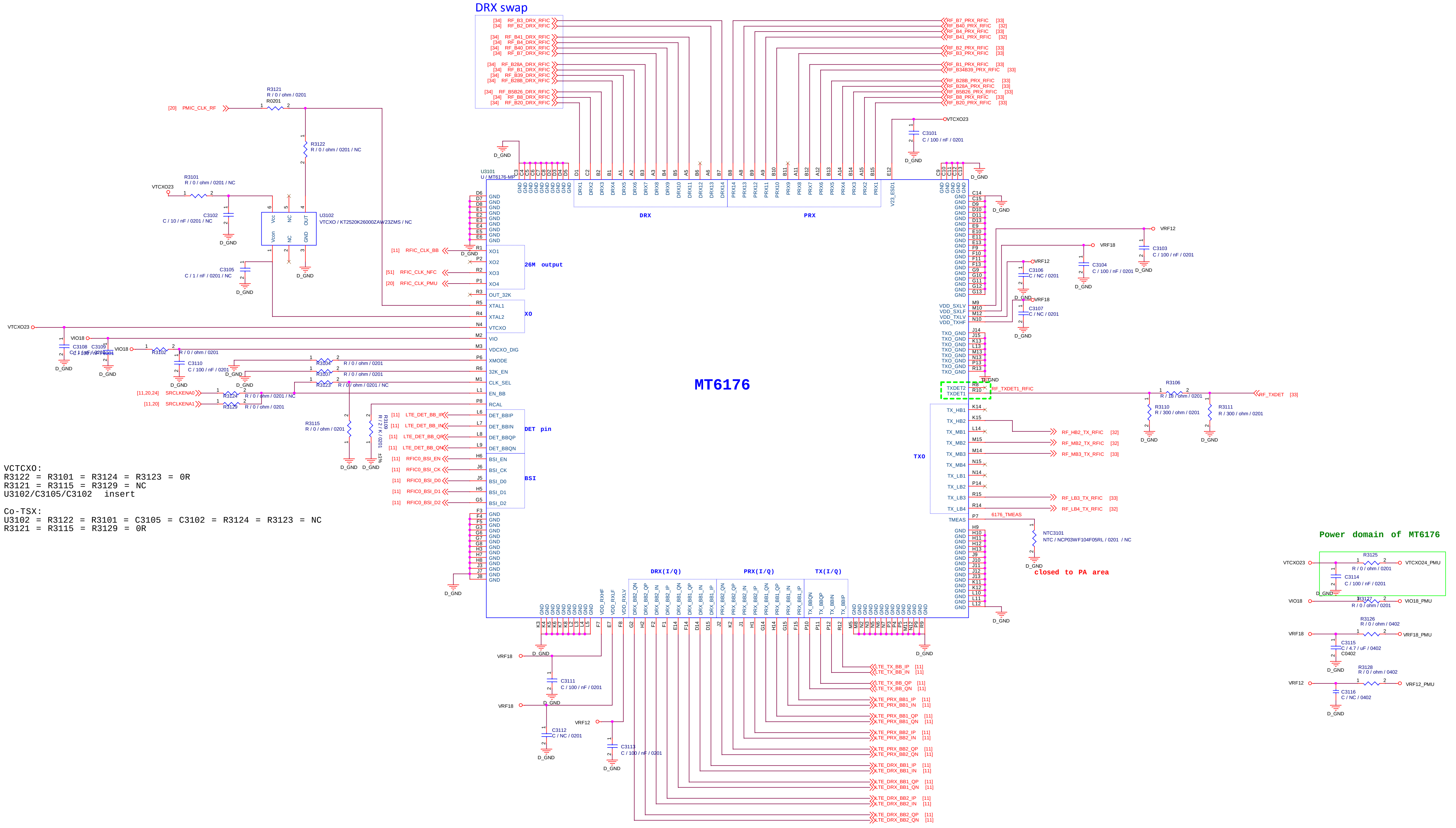


Schematic design notice of "24_POWER_THIRD-PARTY_VDRAM" page.

Note 24-1: Necessary to support LPDDR4X feature

<Variant Name>

Title	24_POWER_THIRD-PARTY
Size C	MTK Confidential
Date: Wednesday, June 29, 2016	Sheet 24 of 99



VCTCXO:
R3122 = R3101 = R3124 = R3123 = 0R
R3121 = R3115 = R3129 = NC
U3102/C3105/C3102 insert

Co-TSX:
U3102 = R3122 = R3101 = C3105 = C3102 = R3124 = R3123 = NC
R3121 = R3115 = R3129 = 0R

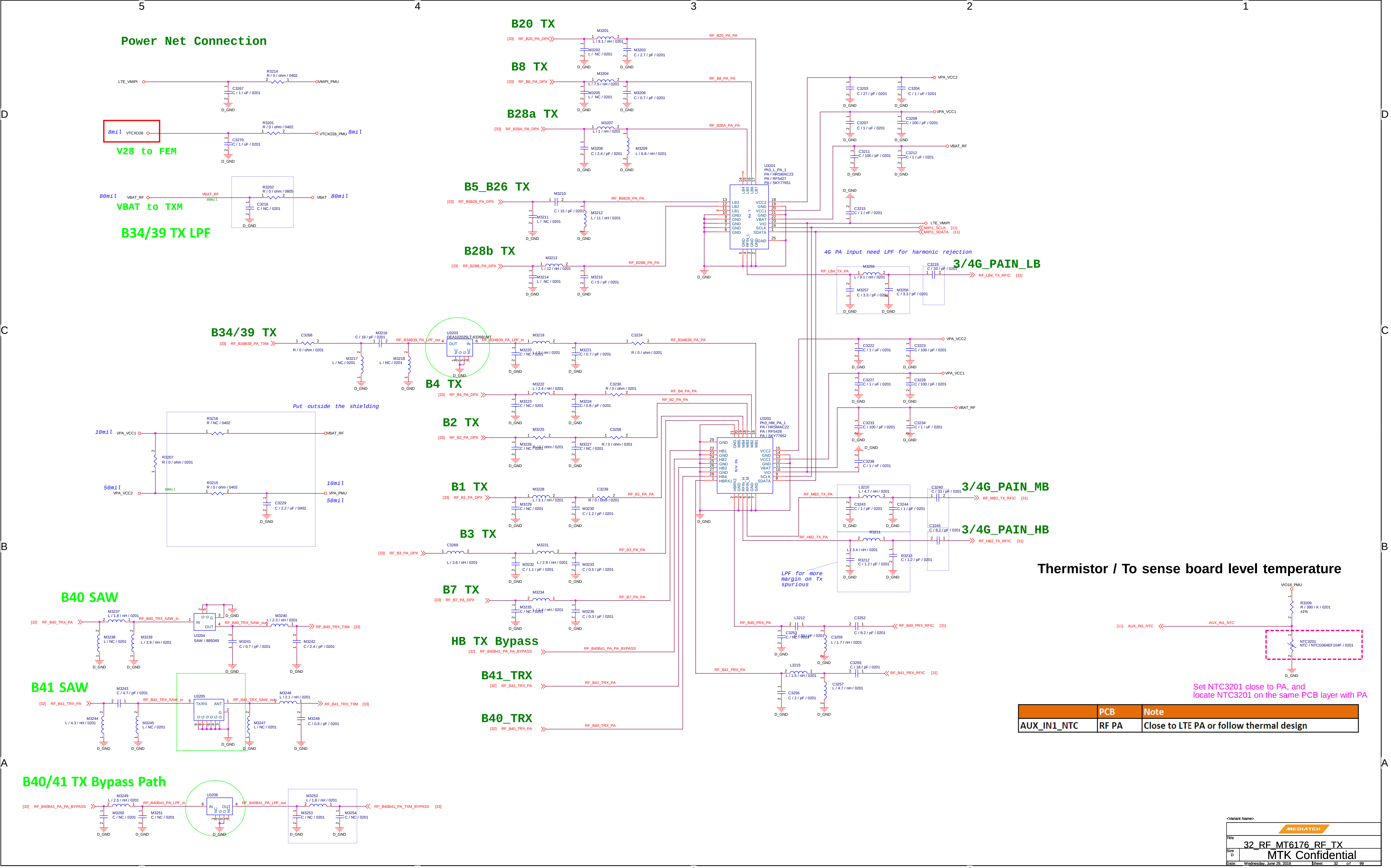
<Variant Name>

Title: 31_RF_MT6176_RF_Pin out

Size: D

MTK Confidential

Date: Wednesday, June 29, 2016 Sheet 31 of 99



Thermistor / To sense board level temperature

	PCB	Note
AUX_IN1_NTC	RF PA	Close to LTE PA or follow thermal design

32_RF_MT6176_RF_TX

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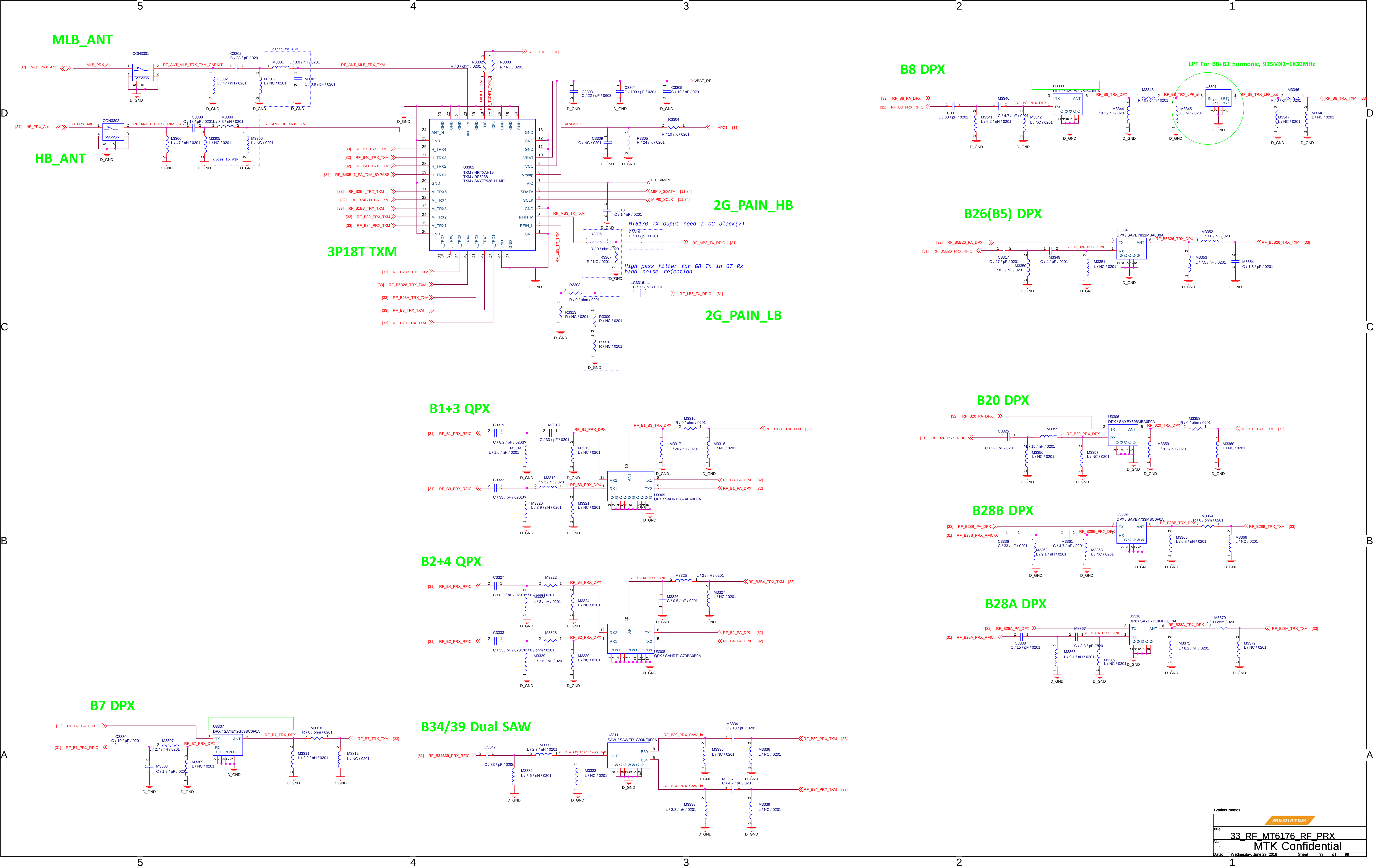
MLB_ANT
HB_ANT
3P18T TXM
2G_PAIN_HB
2G_PAIN_LB
MT6176 TX Ouput need a DC block(?).
High pass filter for G8 Tx in G7 Rx band noise rejection
B8 DPX
LPF For B8+B3 hormonic, 915MX2=1830MHz
B26(B5) DPX
B1+3 QPX
B20 DPX
B28B DPX
B2+4 QPX
B28A DPX
B7 DPX
B34/39 Dual SAW
MEDIATEK
33_RF_MT6176_RF_PRX
MTK Confidential
Date: Wednesday, June 29, 2016
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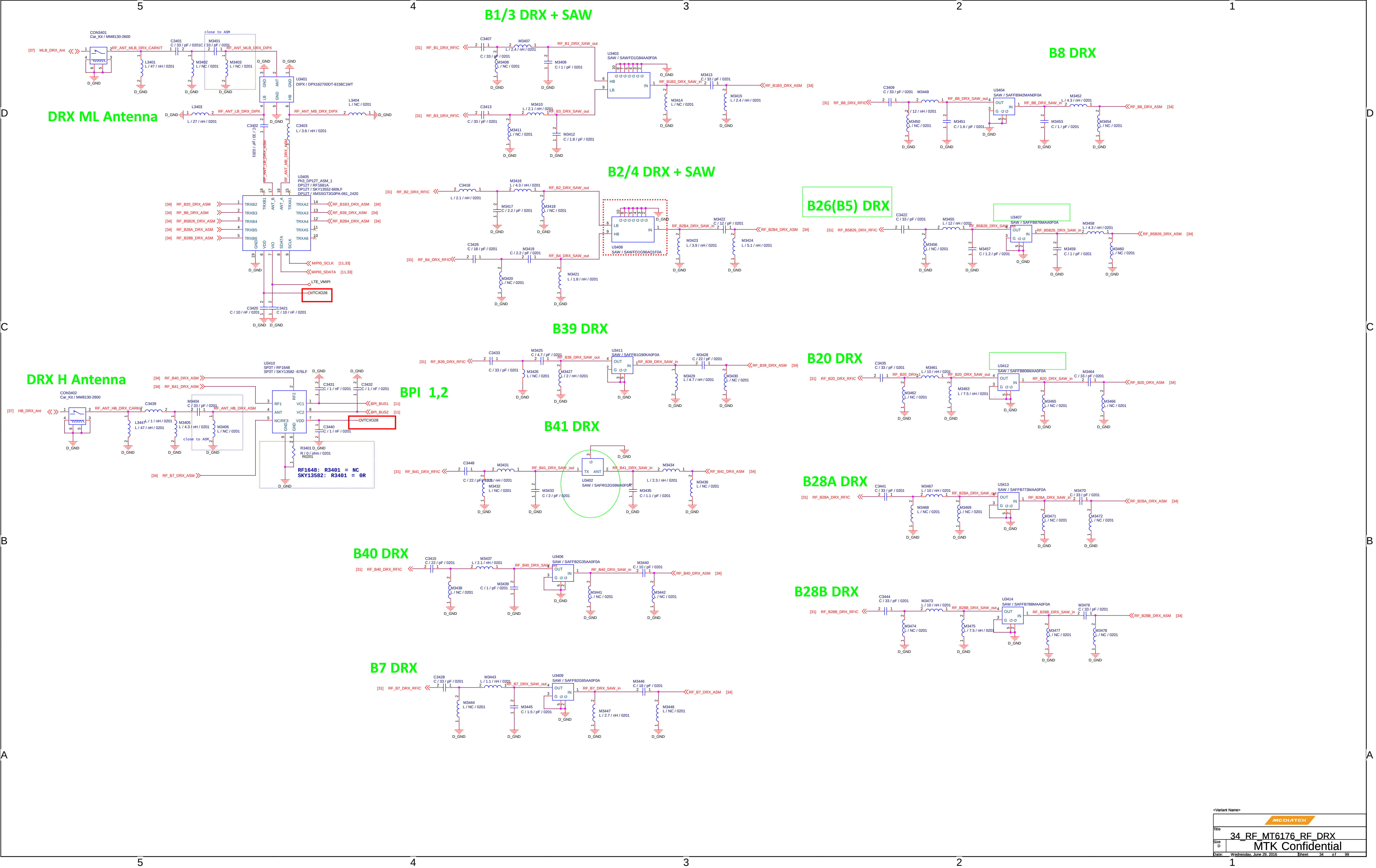
B1/3 DRX + SAW
B8 DRX
DRX ML Antenna
B2/4 DRX + SAW
B26(B5) DRX
B39 DRX
B20 DRX
DRX H Antenna
BPI 1,2
B41 DRX
B28A DRX
B40 DRX
B28B DRX
B7 DRX
RF1648: R3401 = NC
SKY13582: R3401 = 0R
MEDIATEK
34_RF_MT6176_RF_DRX
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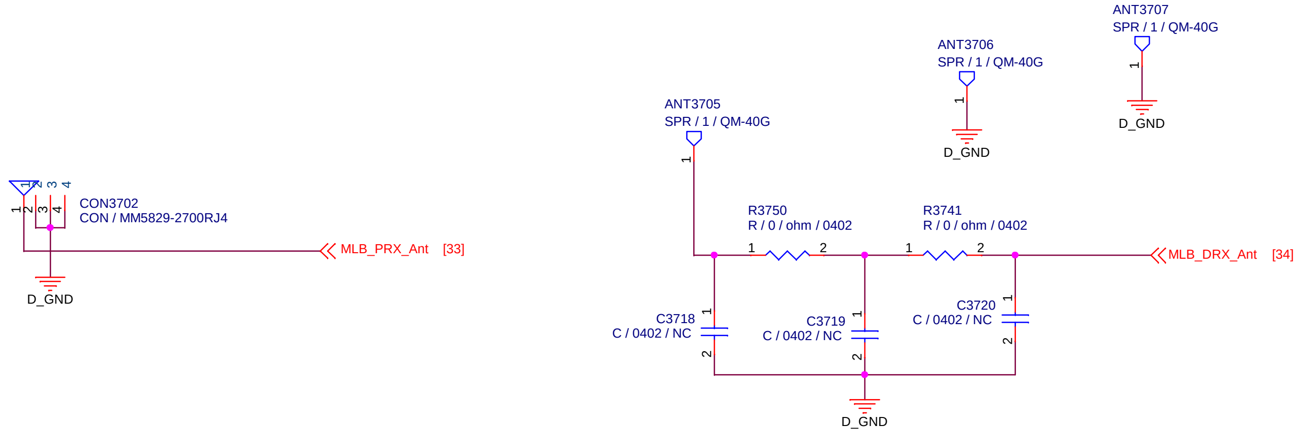
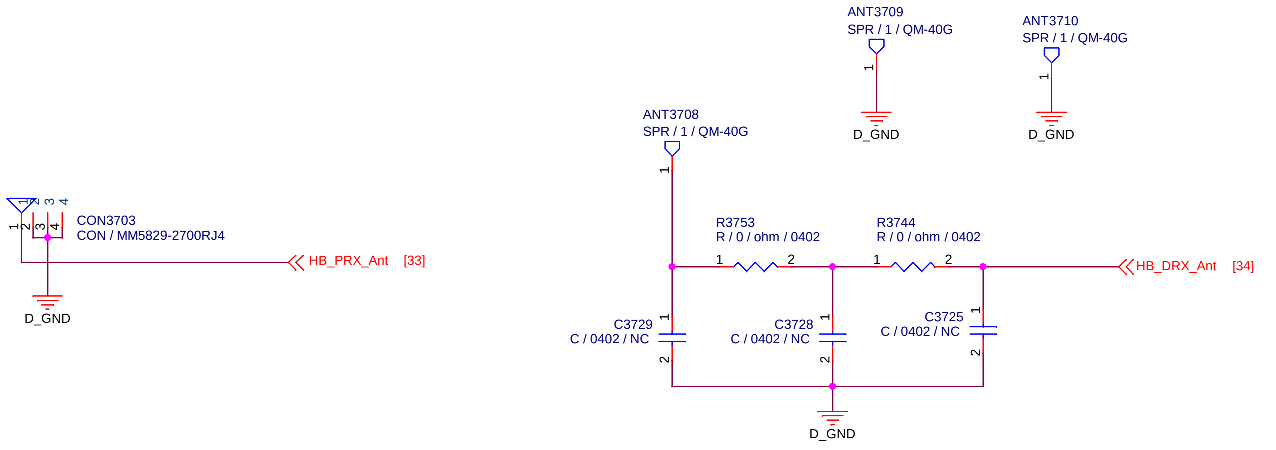
LB/MB MAIN ANT (ANT0_LM)

LB/MB RXD ANT (ANT1_LM)



HB MAIN ANT (ANT0_H)

HB RXD ANT (ANT1_H)



<Variant Name>

MEDIATEK

Title	37_RF_ANT
Size C	MTK Confidential
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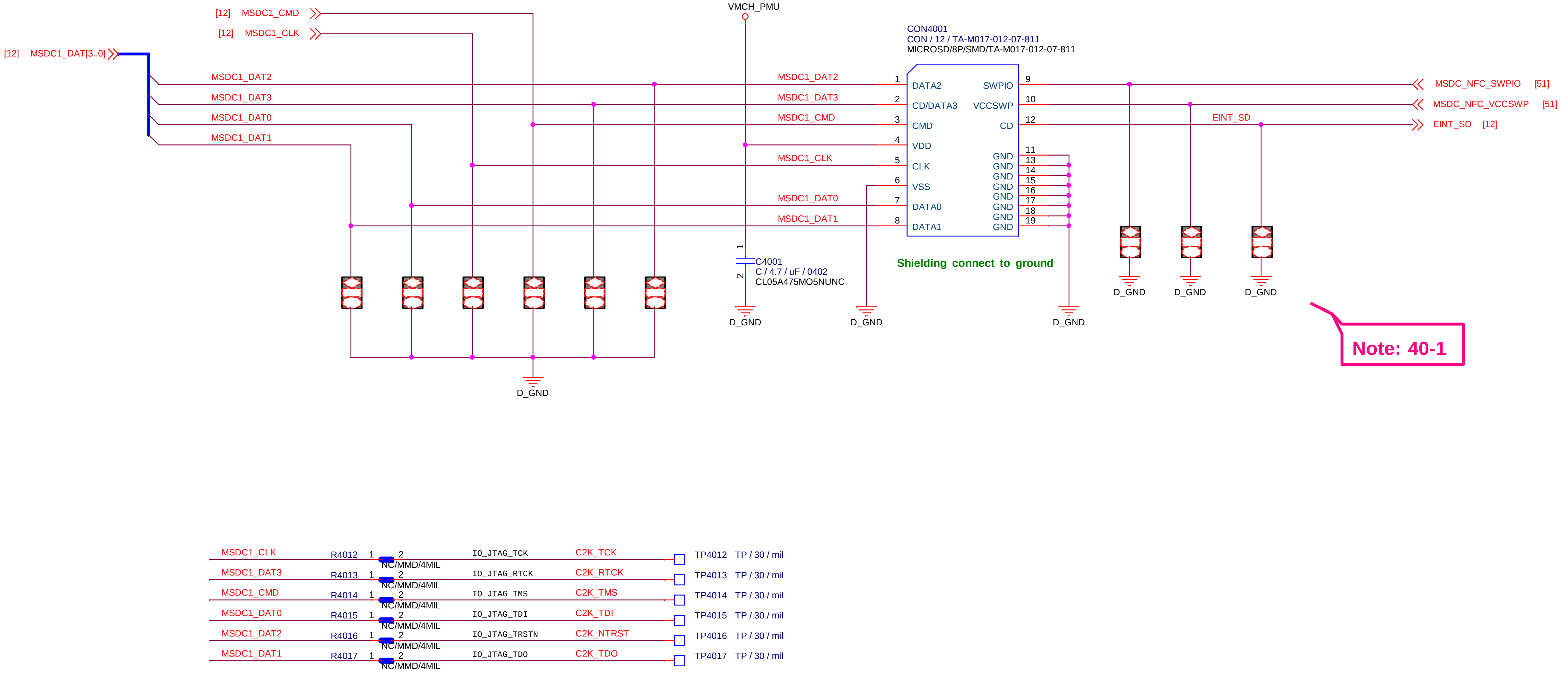
SD CARD



Schematic design notice of "40_MEMORY_SD Card" page.

Note 40-1: The equivalent capacitance of ESD protection device must be <=0.5pF
-- otherwise it will result in NFC card mode function fail.

<Variant Name>

MEDIATEK

Title: 40_Memory SD Card

Size: C

MTK Confidential

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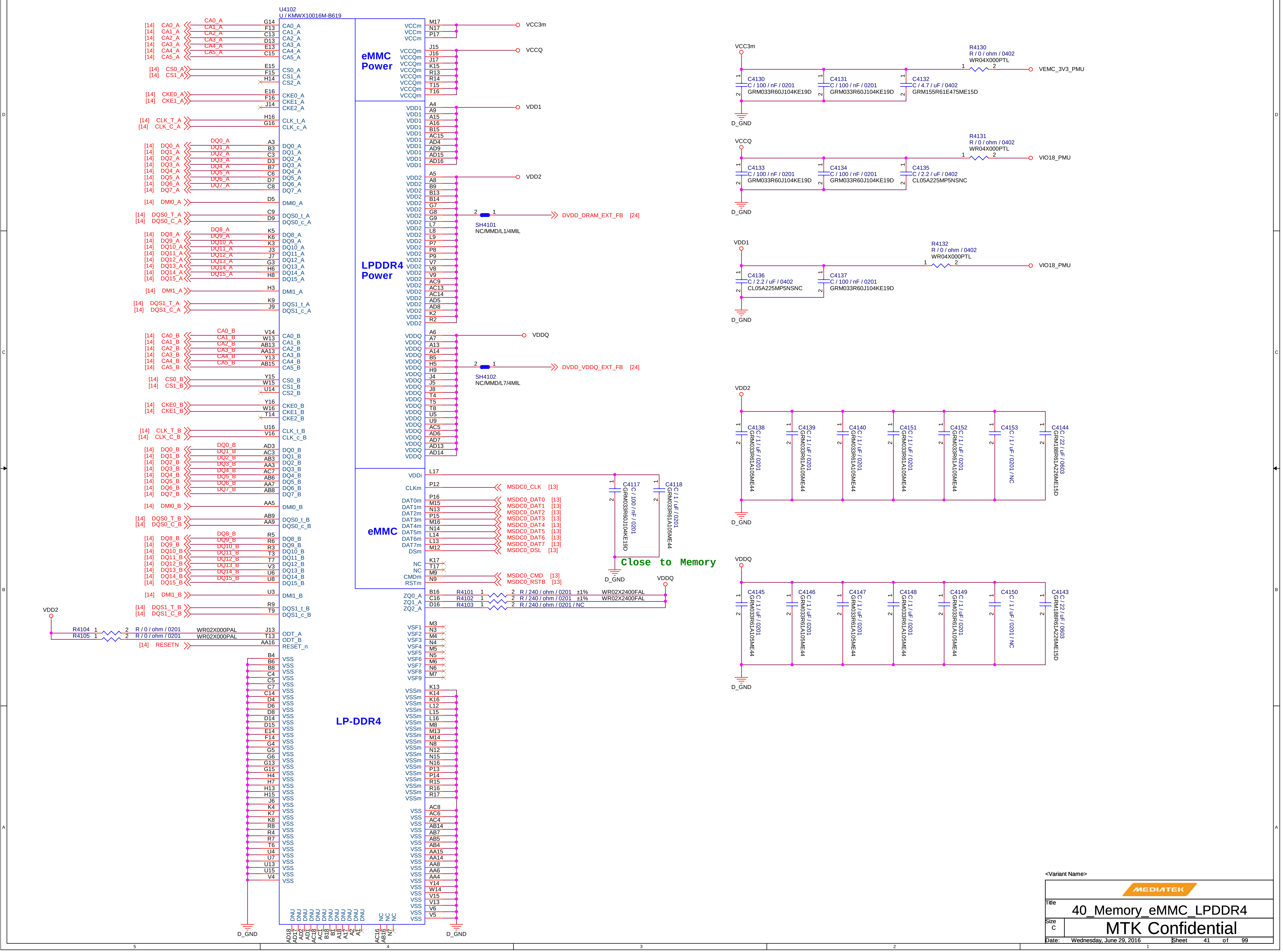

<Variant Name>

MEDIATEK

Title	40_Memory_eMMC_LPDDR4
Size C	MTK Confidential
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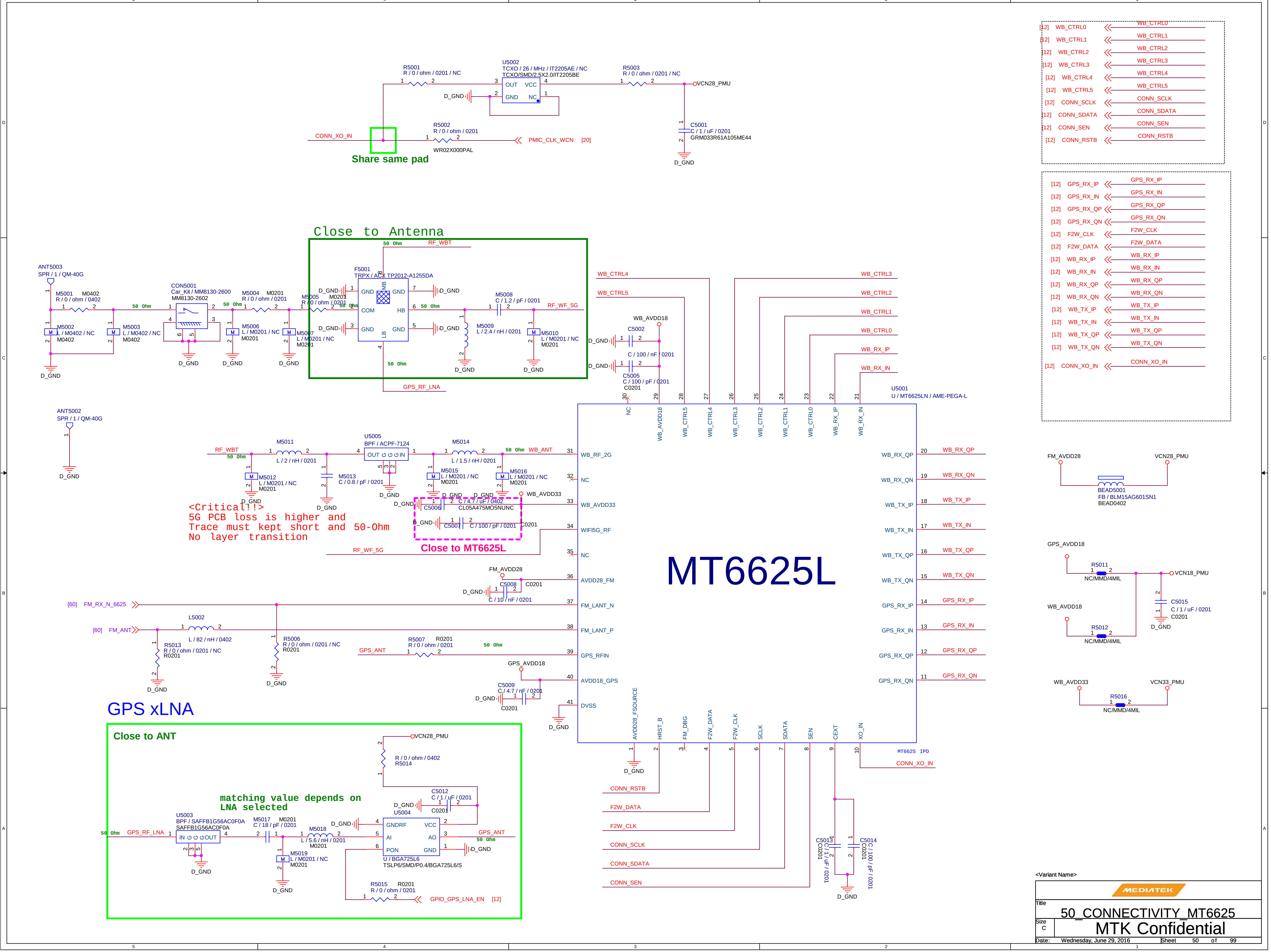

<Variant Name>

MEDIATEK

Title: 50_CONNECTIVITY_MT6625

MTK Confidential

Size: C

Date: Wednesday, June 29, 2016

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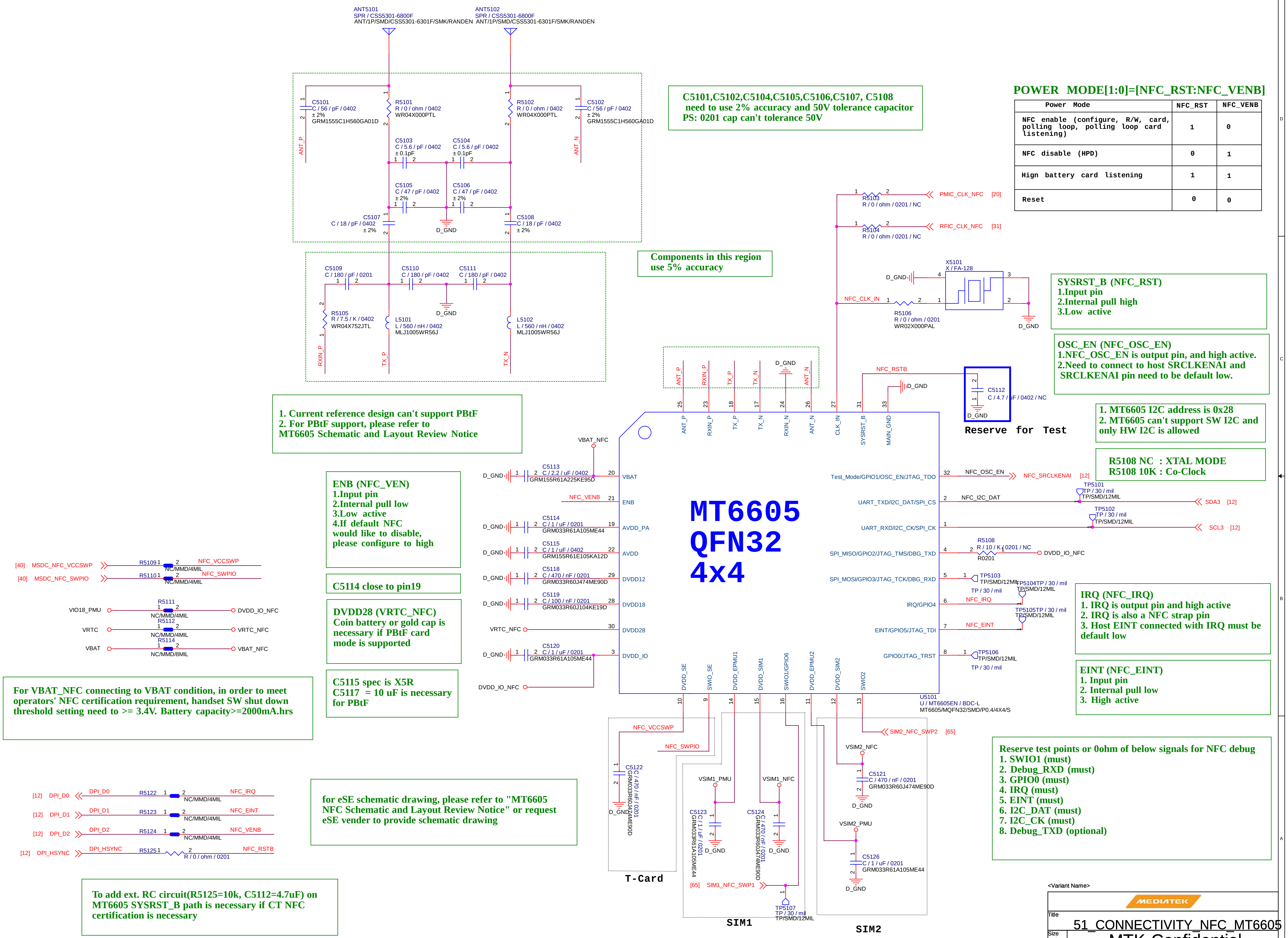

C5101,C5102,C5104,C5105,C5106,C5107, C5108 need to use 2% accuracy and 50V tolerance capacitor
PS: 0201 cap can't tolerance 50V

Components in this region use 5% accuracy

POWER MODE[1:0]=[NFC_RST:NFC_VENB]

Power Mode	NFC_RST	NFC_VENB
NFC enable (configure, R/W, card, polling loop, polling loop card listening)	1	0
NFC disable (HPD)	0	1
Hign battery card listening	1	1
Reset	0	0

SYSRST_B (NFC_RST)
1.Input pin
2.Internal pull high
3.Low active

OSC_EN (NFC_OSC_EN)
1.NFC_OSC_EN is output pin, and high active.
2.Need to connect to host SRCLKENAI and SRCLKENAI pin need to be default low.

1. MT6605 I2C address is 0x28
2. MT6605 can't support SW I2C and only HW I2C is allowed

R5108 NC : XTAL MODE
R5108 10K : Co-Clock

1. Current reference design can't support PBtF
2. For PBtF support, please refer to MT6605 Schematic and Layout Review Notice

ENB (NFC_VEN)
1.Input pin
2.Internal pull low
3.Low active
4.If default NFC would like to disable, please configure to high

C5114 close to pin19

DVDD28 (VRTC_NFC)
Coin battery or gold cap is necessary if PBtF card mode is supported

C5115 spec is X5R
C5117 = 10 uF is necessary for PBtF

For VBAT_NFC connecting to VBAT condition, in order to meet operators' NFC certification requirement, handset SW shut down threshold setting need to >= 3.4V. Battery capacity>=2000mA.hrs

IRQ (NFC_IRQ)
1. IRQ is output pin and high active
2. IRQ is also a NFC strap pin
3. Host EINT connected with IRQ must be default low

EINT (NFC_EINT)
1. Input pin
2. Internal pull low
3. High active

for eSE schematic drawing, please refer to "MT6605 NFC Schematic and Layout Review Notice" or request eSE vender to provide schematic drawing

Reserve test points or 0ohm of below signals for NFC debug
1. SWIO1 (must)
2. Debug_RXD (must)
3. GPIO0 (must)
4. IRQ (must)
5. EINT (must)
6. I2C_DAT (must)
7. I2C_CK (must)
8. Debug_TXD (optional)

To add ext. RC circuit(R5125=10k, C5112=4.7uF) on MT6605 SYSRST_B path is necessary if CT NFC certification is necessary

<Variant Name>

MEDIATEK

Title	51_CONNECTIVITY_NFC_MT6605
Size C	MTK Confidential
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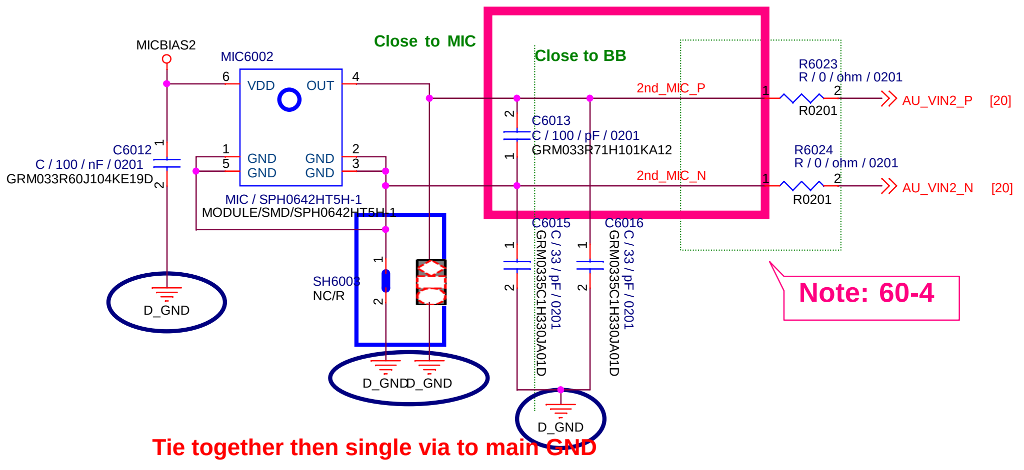
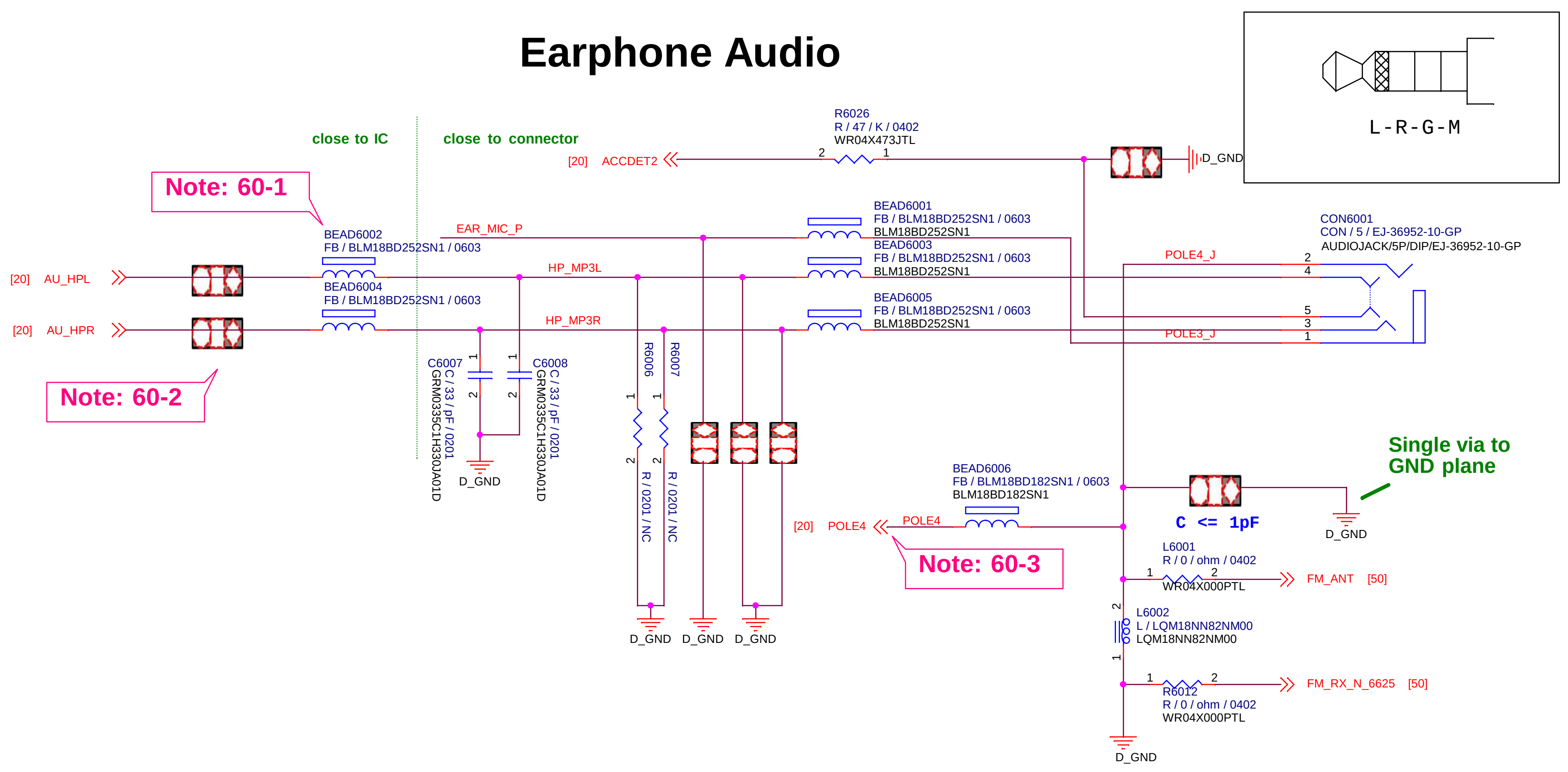
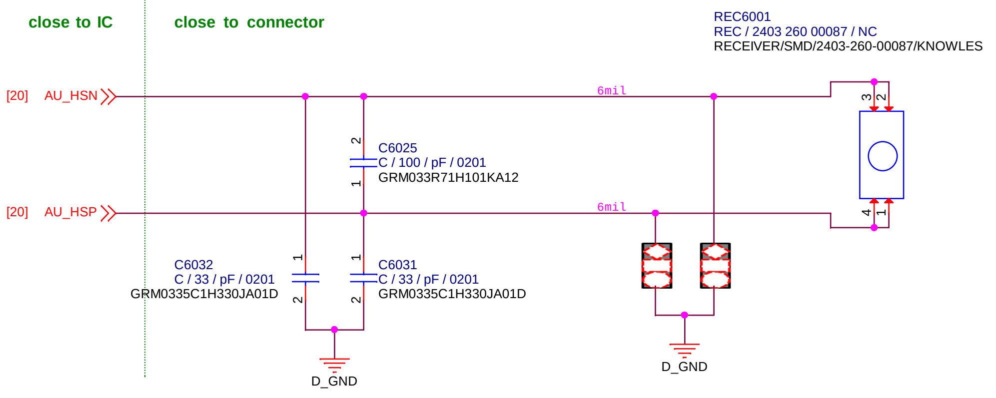
Handset Microphone 2-1 (Rear - DMNR)



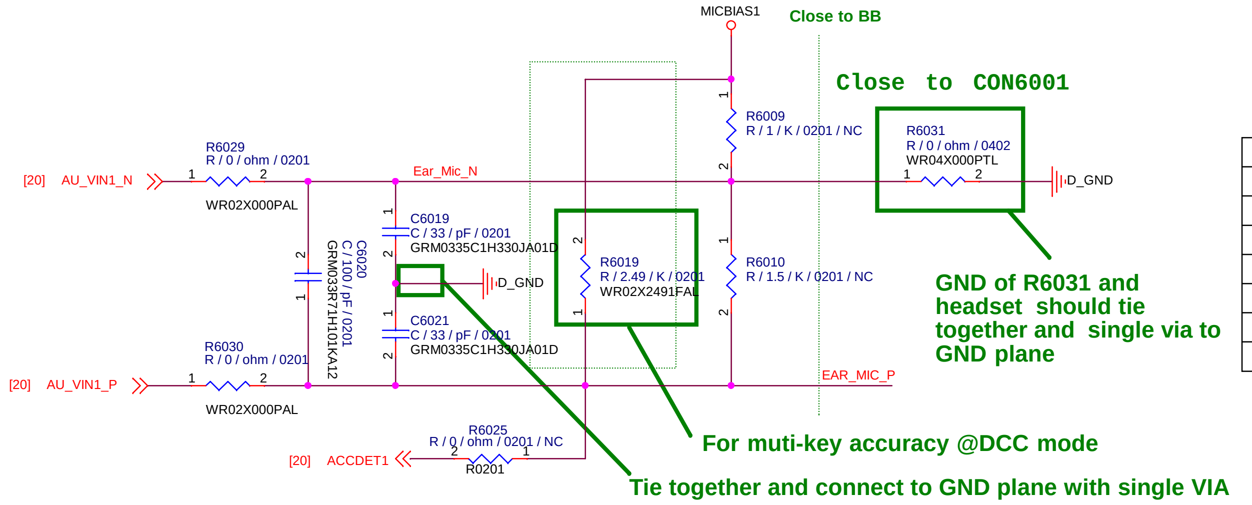
Earphone Audio



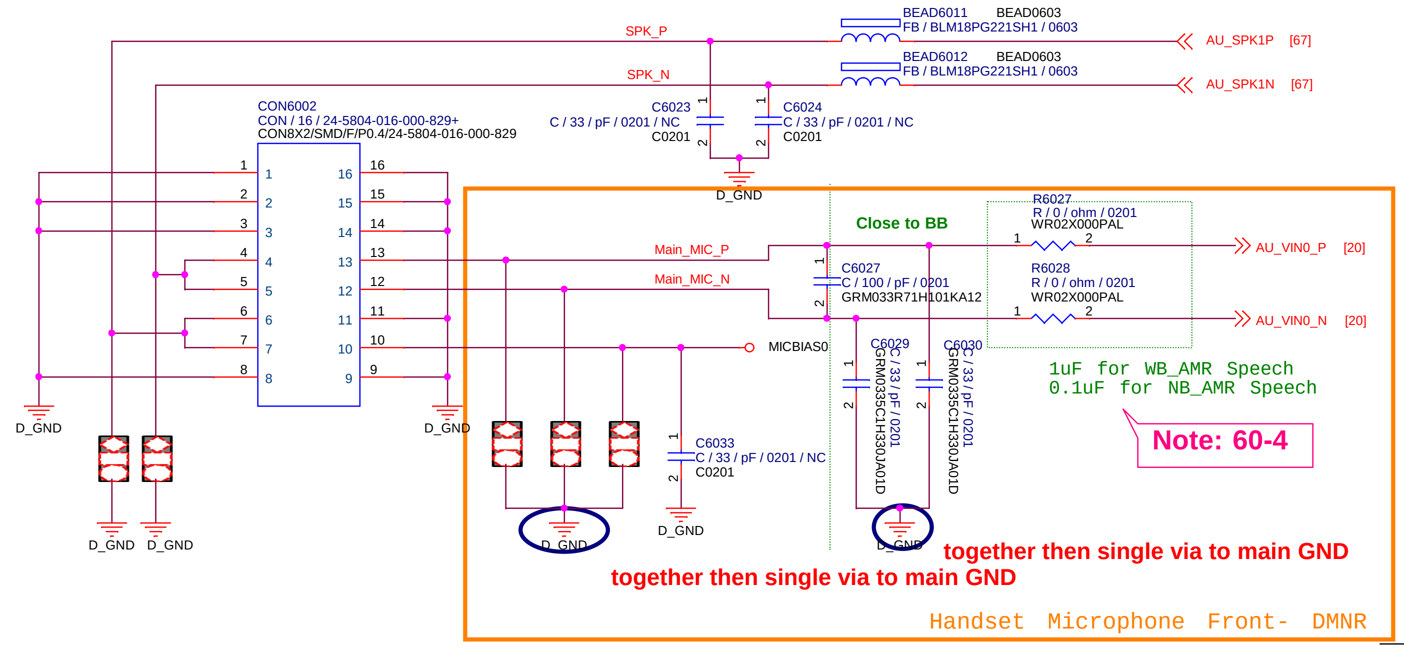
Receiver



Earphone MICPHONE



	ACC mode	DCC mode
R6029	1uF	0 ohm
R6030	1uF	0 ohm
R6009	1K	NC
R6010	1.5K	NC
R6019	NC	2.49K
R6031	4.7uF	0 ohm
R6025	0 ohm	NC



Schematic design notice of "60_PERI_AUDIO_IO" page.

Note 60-1: Part # of BEAD6002, BEAD6003, BEAD6004 and BEAD6005 needs changed to "BLM18BD102SN1" for high THD performance (-90dB) but this BOM change will results in FM RSSI 10dB degraded .

Note 60-2: To reserve a resistor in HPL and HPR in series connection both in order to optimize headphone pop noise. The recommended value of this resistor is 33R. If care Pop noise very much ,need reserve analog switch. For the detail information, please refer to audio and speech design note or contact MTK support team.

Note 60-3: Layout trace from MT6351 ball G4 AUDREFN to Audio jack GND must surround shield with GND

Note 60-4: 1 uF for ACC mode
0 ohm for DCC mode

<Variant Name>

MEDIATEK

Title: 60_PERI_AUDIO_IO

Size C — MTK Confidential

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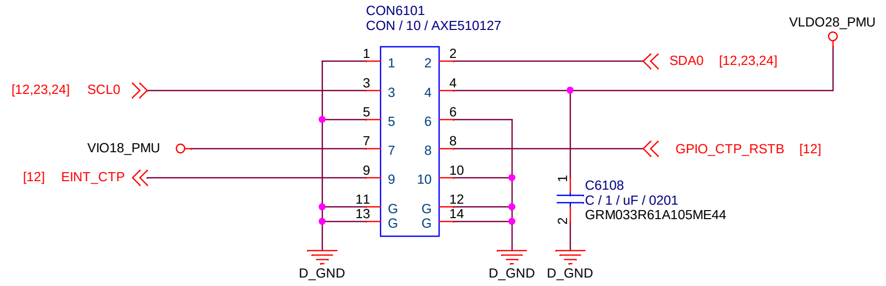
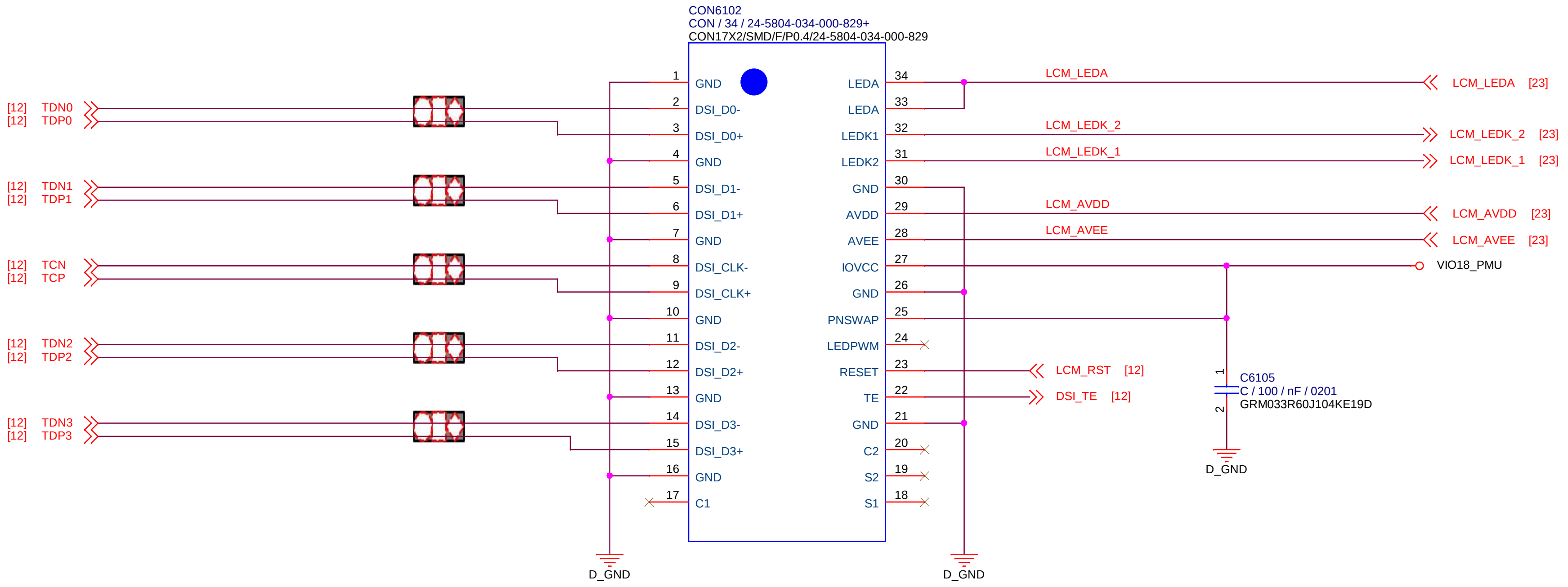
CTP



Main LCM



Schematic design notice of "61_PERI_LCD_CTP" page.

Note 61-1: COF GT1151 I2C address: 0X5D (Write:0xBA, Read:0xBB)
Or 0X14 (Write:0x28, Read:0x29)

<Variant Name>

MEDIATEK

Title	61_PERI_LCD_CTP
Size C	MTK Confidential
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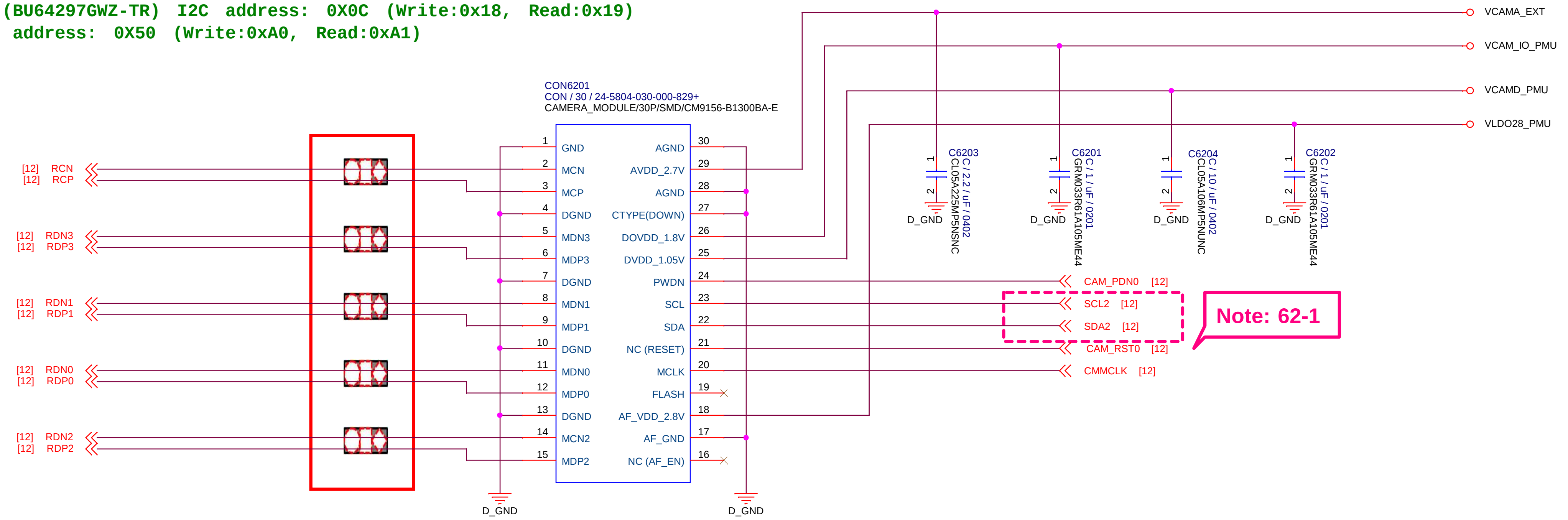
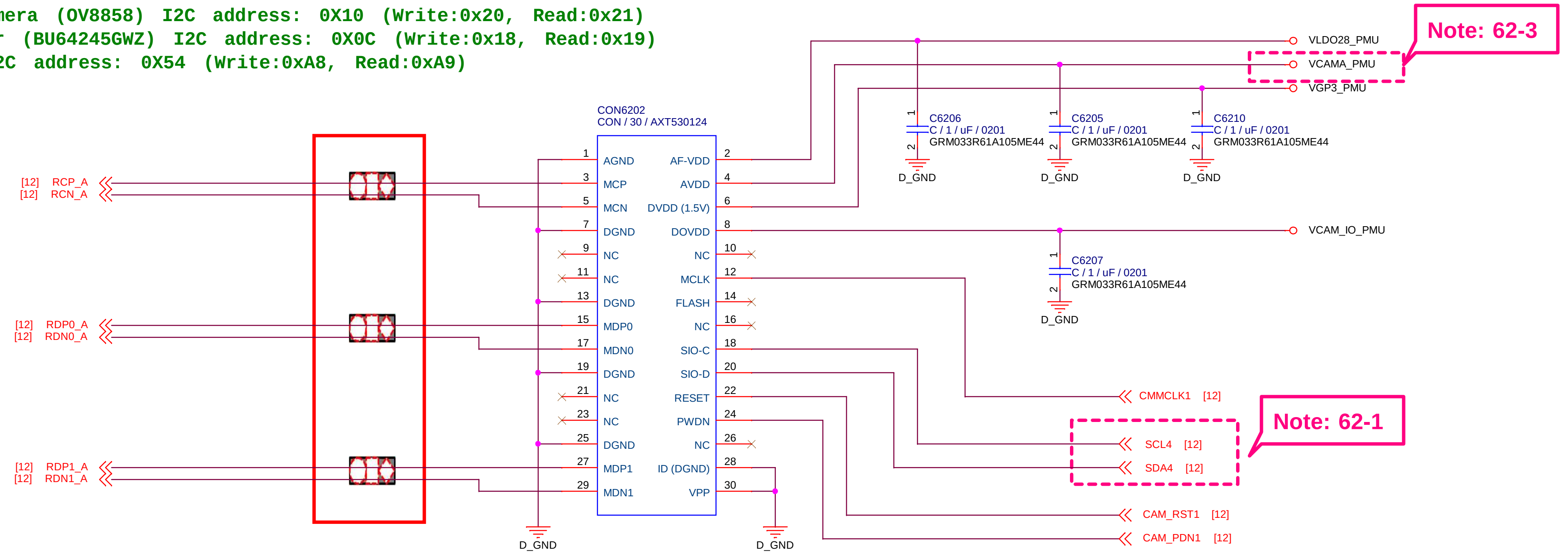
Rear Camera - 21M

Rear camera (IMX338) I2C address: 0X1A (Write:0x34, Read:0x35)
AF driver (BU64297GWZ-TR) I2C address: 0X0C (Write:0x18, Read:0x19)
EEPROM I2C address: 0X50 (Write:0xA0, Read:0xA1)

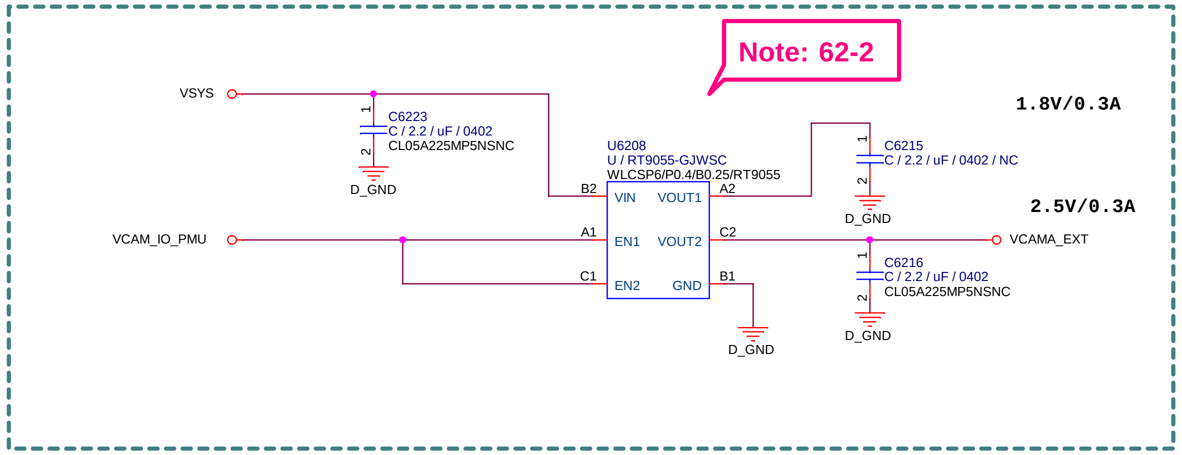


Front Camera - 8M

Front camera (OV8858) I2C address: 0X10 (Write:0x20, Read:0x21)
AF driver (BU64245GWZ) I2C address: 0X0C (Write:0x18, Read:0x19)
EEPROM I2C address: 0X54 (Write:0xA8, Read:0xA9)



2.5V for VCAMA



Schematic design notice of "63_PERI_CAMERA_KEYPAD" page.

Note 62-1:	The VCC of I2C2 & I2C4 is pulled to "VIO18_PMU".
Note 62-2:	Design of external LDO depends on camera module solution VCAMA_PMU on MT6351 is also an option to be a power source of camera module
Note 62-3:	For SUB CAM PIP FUNCTION (VCAMA), suggest to separate SUB-VCAMA and MAIN-VCAMA into different power sources

<Variant Name>

MEDIATEK

Title: 62_PERI_CAMERA

Size: C

MTK Confidential

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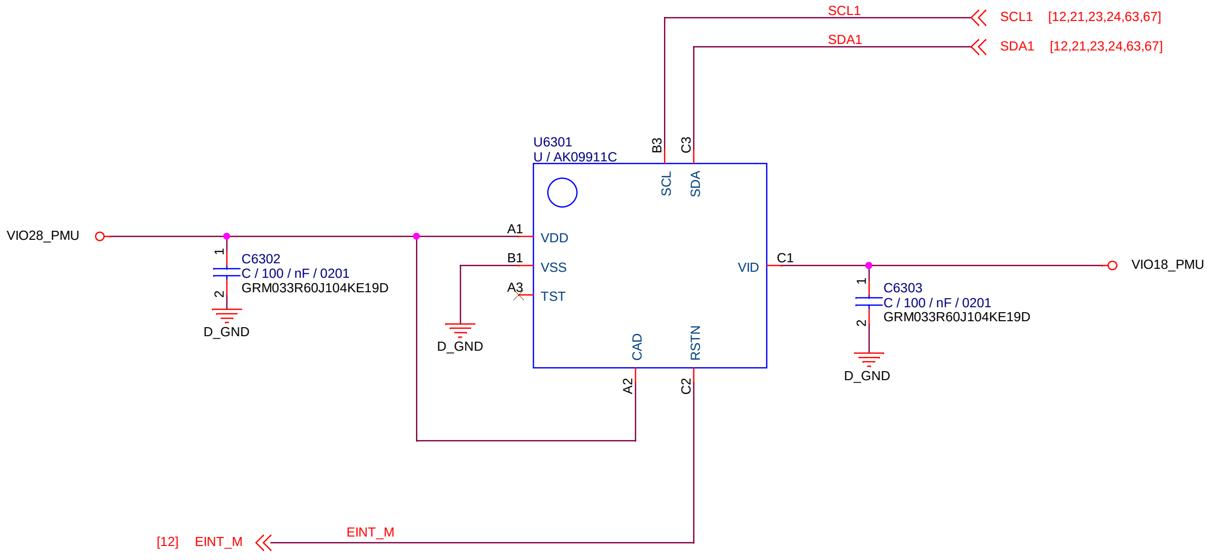
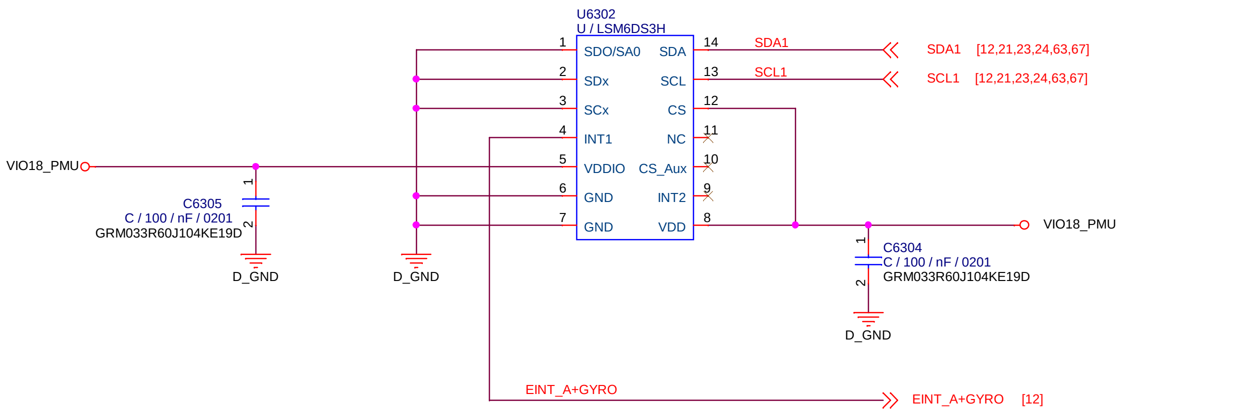
M-Sensor

AK09911C / M-Sensor I2C Address : 0x0C (Write:0x18, Read:0x19)



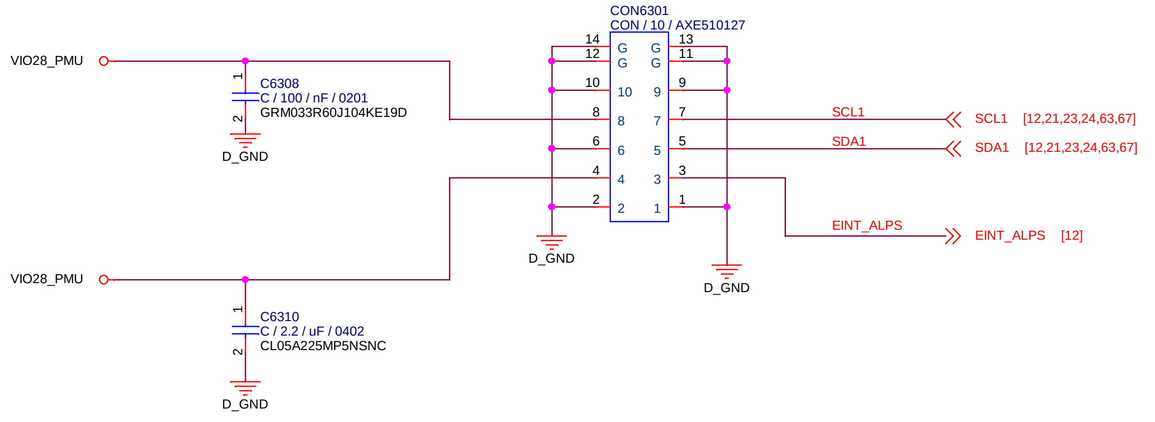
Accerometer + Gyro Sensor

LSM6DS3H / A+Gyro I2C Address: 0x6A (Write:0xD4, Read:0xD5)



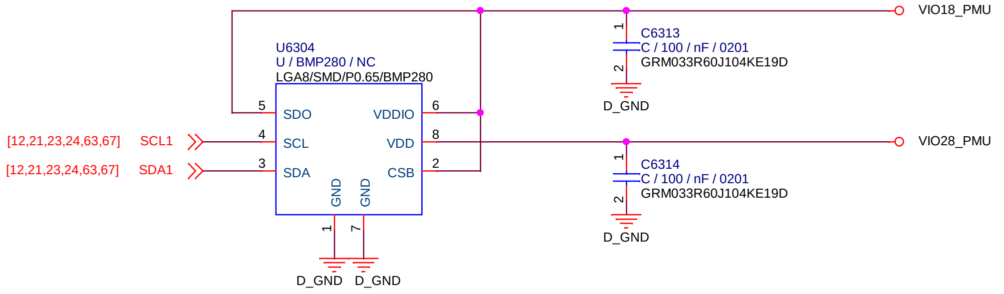
RGB & PS Sensor

CM36558 / ALPS + UV I2C address: 0x51 (Write:0xA2, Read:0xA3)

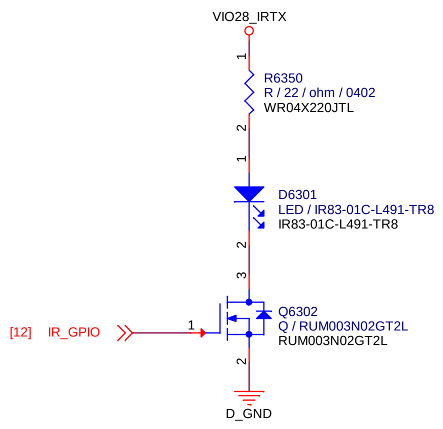


Baro Sensor

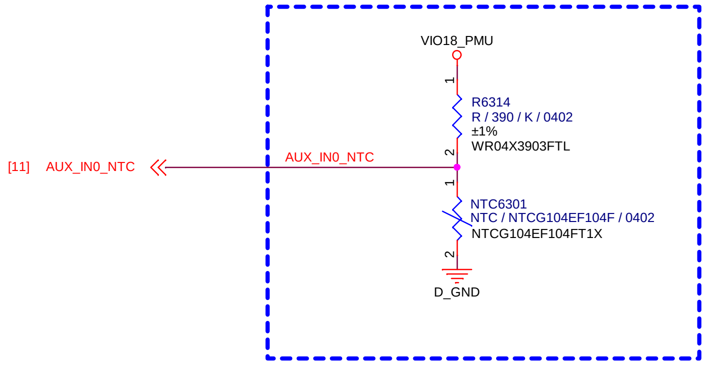
Baro I2C address: 0X77 (Write:0xEE, Read:0xEF)



LDO For IR_TX FUNCTION



Thermistor / To sense board level temperature



Keep NTC away from AP IC 5 ~ 7mm, and also away from other heat sources 10mm ~ 12mm

<Variant Name>

MEDIATEK

Title: 63_PERI_SENSORS

Size: C — MTK Confidential

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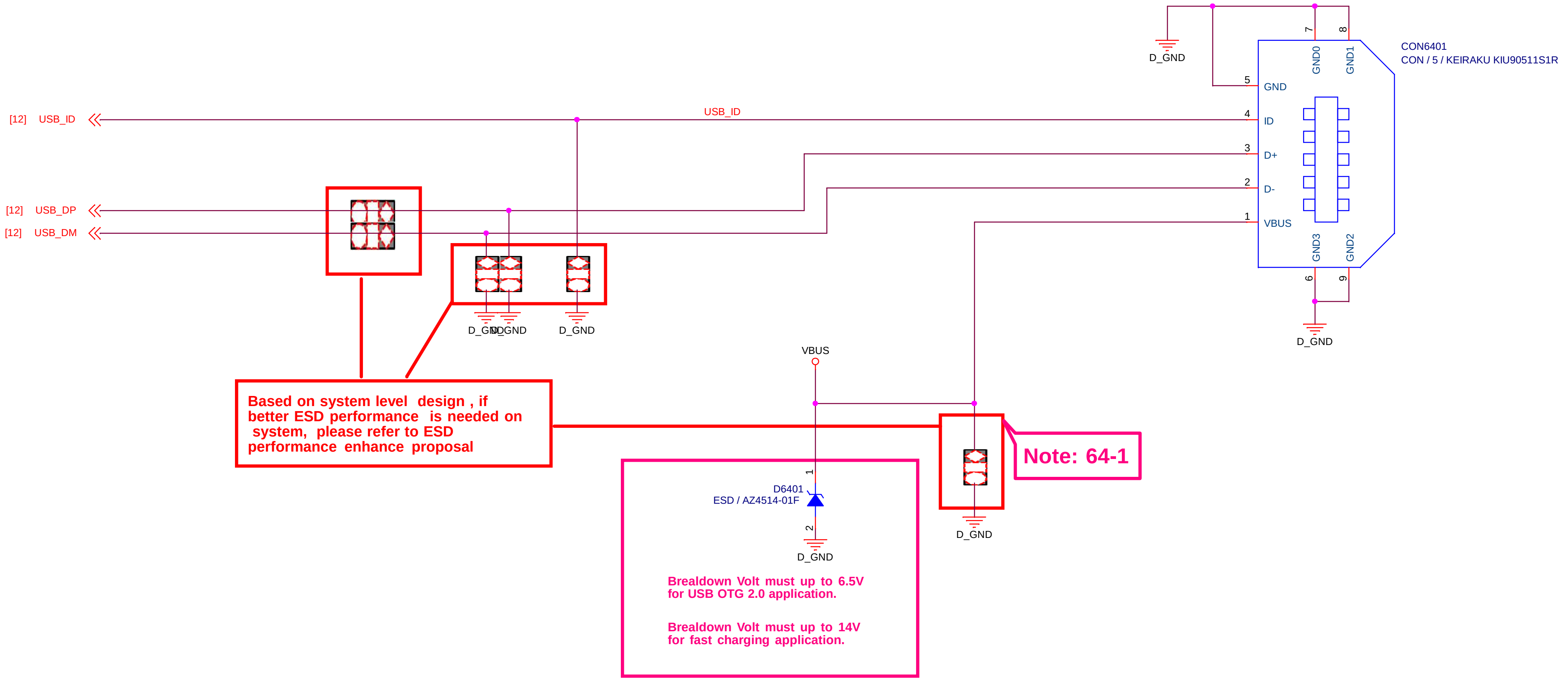

Schematic design notice of "64_PERI_USB" page.

Note 64-1: Based on design , if better surge performance is needed on your system, please refer to surge device selection guide and choice a surge protection device for this part
(notice: 5V normal / 13.2V quick charge)

<Variant Name>

MEDIATEK

Title	64_PERI_USB_MHL	
Size C	MTK Confidential	
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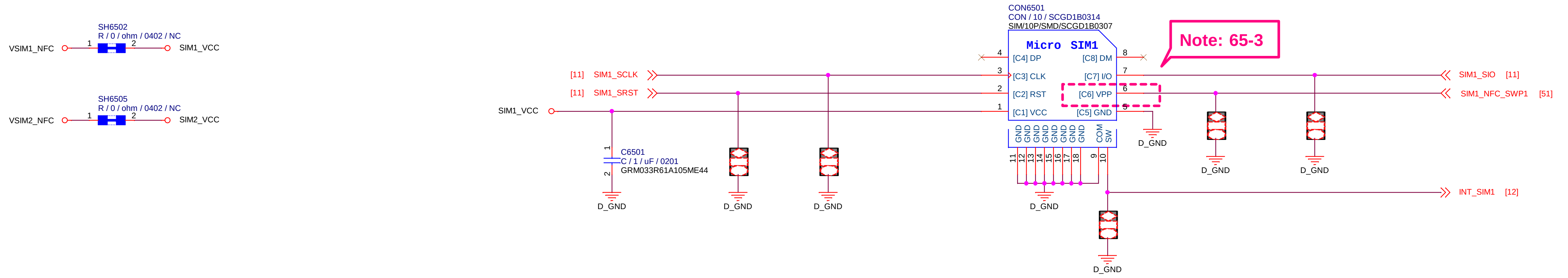
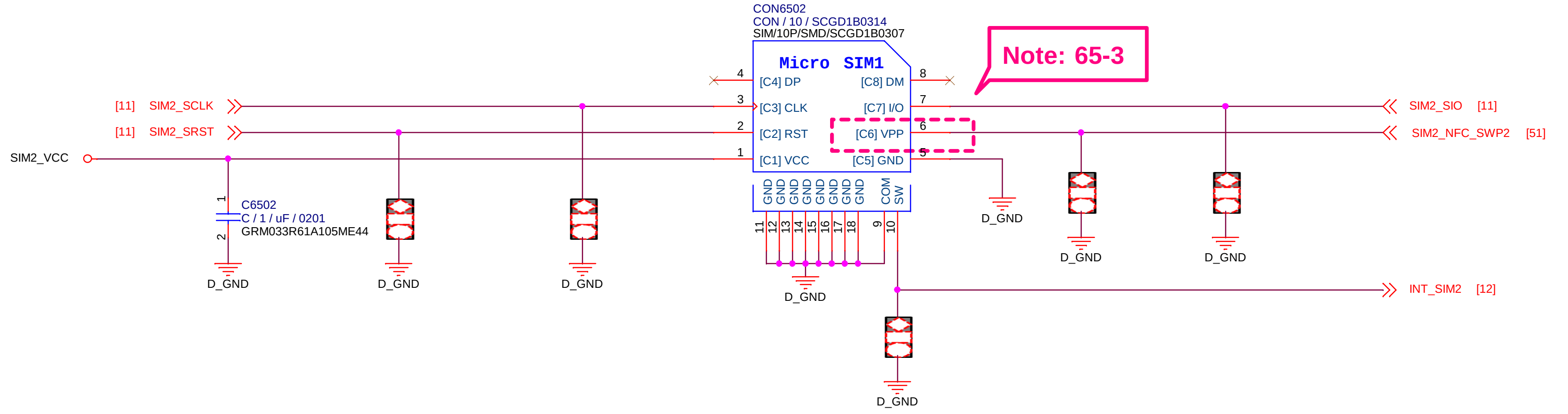
SIM1

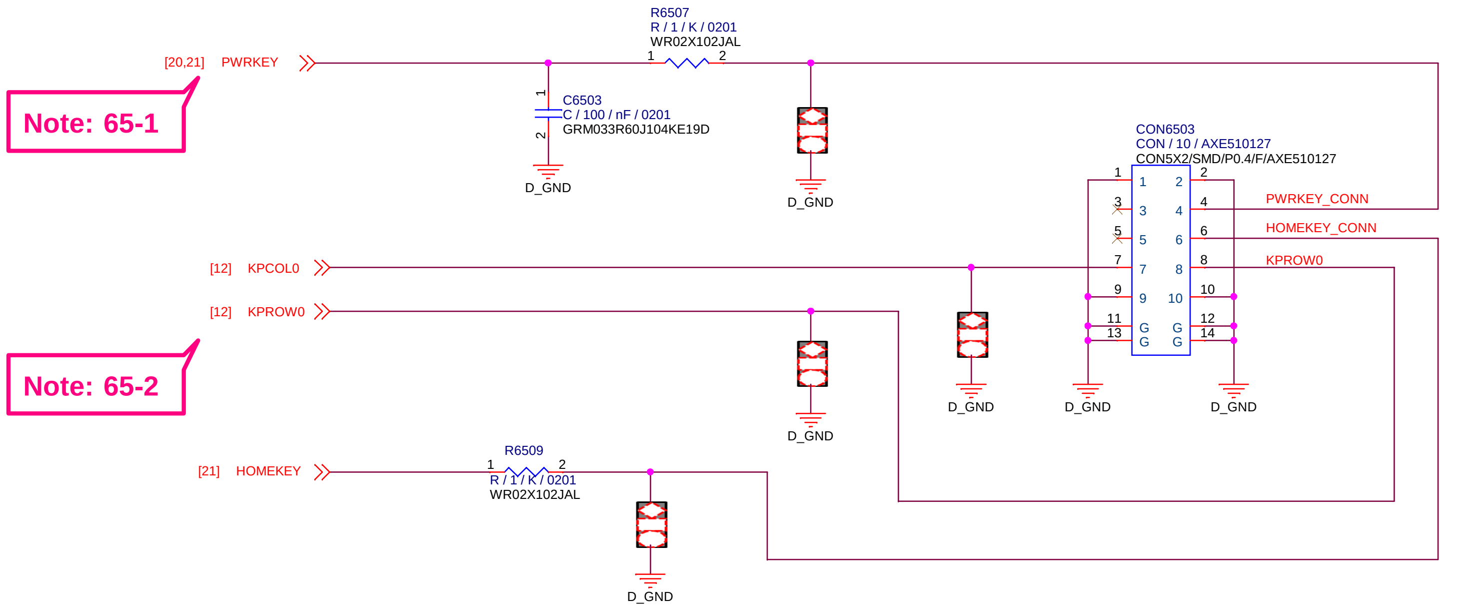


SIM2



Power Key / Key Pad

DO NOT put pull-up resistor on PWRKEY



RAMDUMP debug key

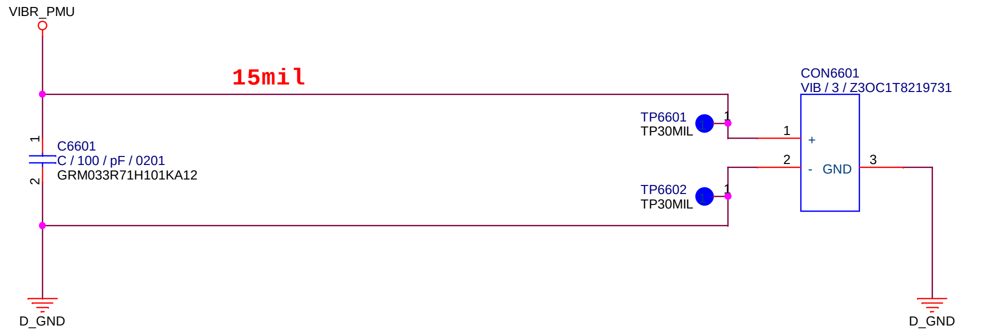
Schematic design notice of "65_PERI_Dual_SIM_ICUSB_KEYPAD" page.

Note 65-1: DO NOT put pull-up resistor on PWRKEY

Note 65-2: Volume Up : HOME Key / GND
Volume Down : KPROW0/KPCOL0

Note 65-3: If do not need NFC SIM function, let Vpp pin floating

VIBRATOR



<Variant Name>

MEDIATEK

Title: 66_PERI_VIBRATOR

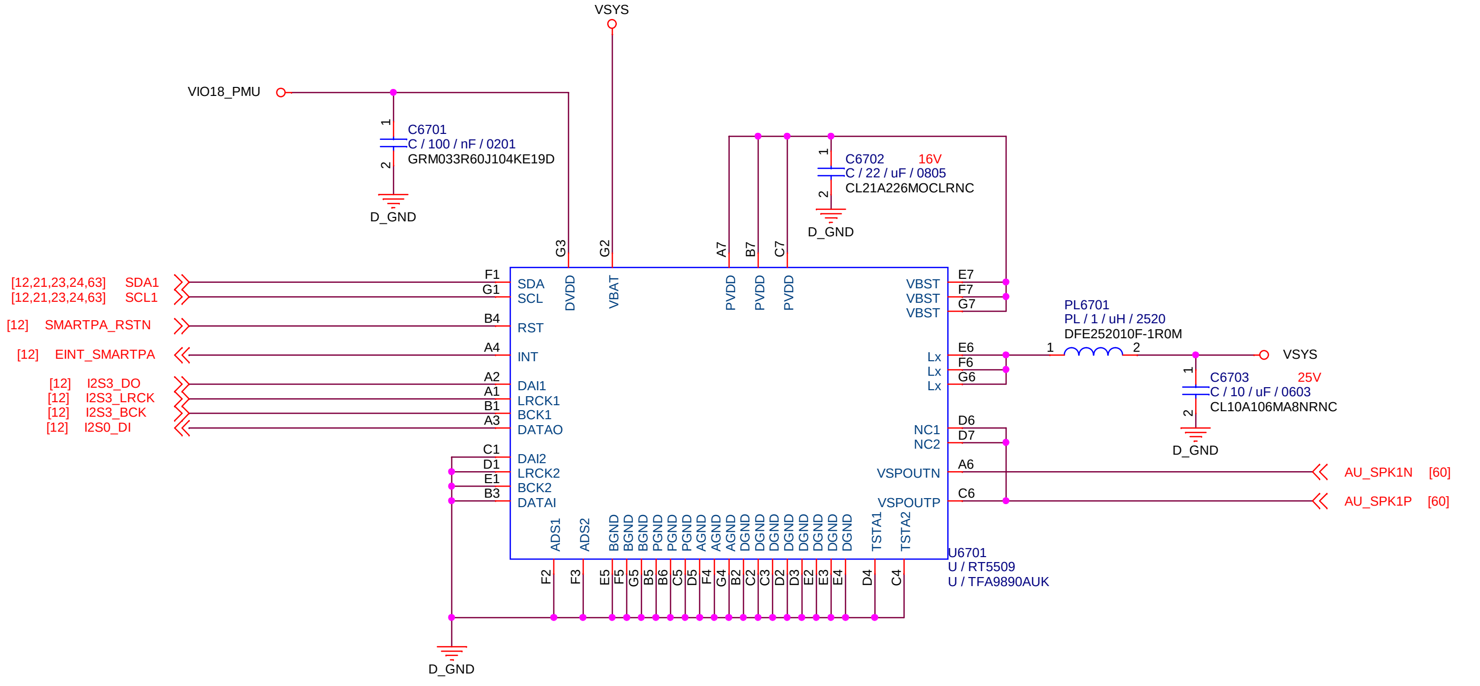
Size: C

MTK Confidential

Date: Wednesday, June 29, 2016 Sheet 66 of 99

Speaker Amplifier

RT5509 / TFA9890AUK Speaker AMP I2C Address: 0x34 (Write:0x68, Read:0x69) when ADS1 = GND; ADS2 = GND.



ADS2 Pin (V)	ADS1 Pin (V)	Address	Function (bit 0)
0	0	0110100x	0: write 1:read
0	DVDD	0110101x	0: write 1:read
DVDD	0	0110110x	0: write 1:read
DVDD	DVDD	0110111x	0: write 1:read

MT6757	RT5509	Note
SMARTPA_RSTN	RST	Reset
EINT_SMARTPA	INT	Interrupt
I2S3_DO	DAI1	I2S Data Input 1
I2S3_LRCK	LRCK1	I2S Word Select 1
I2S3_BCK	BCK1	I2S Bit Clock 1
I2S0_DI	DATAO	I2S Data Output

<Variant Name>

Title: 67_PERI_SPEAKER_AMP

Size: C

MTK Confidential